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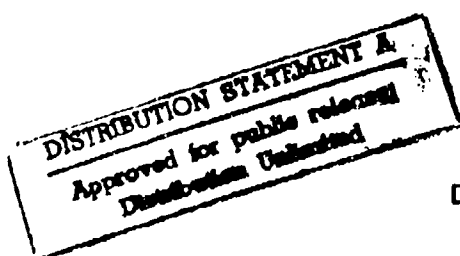


THE ORGANIZATIONAL IMPACT OF SMOKE BREAK  
MANAGEMENT IN STRATEGIC AIR COMMAND

THESIS

Glenn G. Hinken, Captain, USAF

AFIT/GLM/LSR/91S-31



DEPARTMENT OF THE AIR FORCE  
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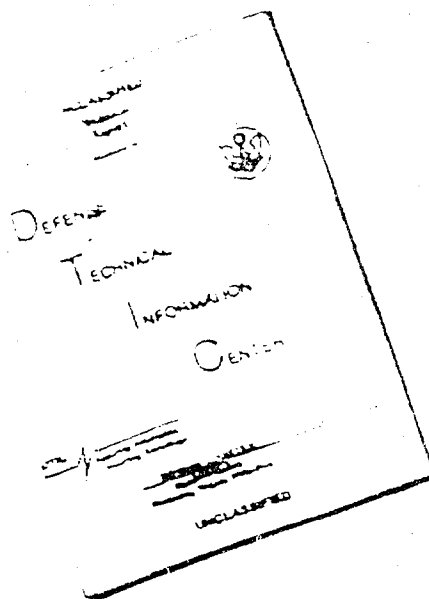


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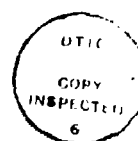
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MANAGEMENT IN STRATEGIC AIR COMMAND

THESIS

Presented to the Faculty of the School of Systems and Logistics  
of the Air Force Institute of Technology  
Air University  
In Partial Fulfillment of the  
Requirements for the Degree of  
Master of Science in Systems Management

Glenn G. Hinken, B. A.

Captain, USAF

September 1991

Approved for public release; distribution unlimited

### Acknowledgements

A single name appears on the title page of this thesis, but its production required the guidance, inspiration, and support of many others.

Major Mark Kain E. Kain conducted the initial research that provided the framework and impetus for this research.

Lt Col John T. Huguley, Jr. provided me the license to conduct this research. At times, its development more often resembled an impulse to travel than the deliberate actions required to arrive at a specific destination. While I, as the aimless traveler, would have gladly taken direction at the many crossroads when I encountered them, I sincerely thank Colonel Huguley for forcing me to navigate my own course. I naively call this course "my own." In reality, Colonel Huguley blazed so far ahead of me that I failed to notice his marks in "my" path.

My family inspired me to overcome the challenges imposed by this thesis. I often recalled sacrifices my parents made for my education, the confidence my brother and sisters (and their better halves) expressed in me, and the devotion of the eminent scholar, R. F. Walton, whose lifework was cultivating a higher sense of awareness in the lower primates.

Last, my sweetheart, Cammie, kept me. Too often, this thesis demanded attention rightfully hers. While she refrained from complaint, she regularly bore the full brunt of mine that I registered regarding time I perceived better spent elsewhere. In addition, she voluntarily managed every aspect of our household to permit me time not only to complete this thesis, but to pursue the leisure I required to keep my sanity. No other 15-month period in the nine plus years we've been married has been harder on her, and easier on me. In return for her sacrifice, I gladly pledge a lifetime of devotion and the dedication of this thesis.

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Abstract

This study investigated the organizational impact of smoke break management in Strategic Air Command. Responses from 232 SAC members were analyzed to examine the extent of the smoking and smoke break issue in the command, current smoke break management, the time smokers spend taking smoke breaks daily, smoker networking, the relationship between average daily smoke break time and variables that affect the organization, and the feasibility of managing smoke breaks to control these variables. Analysis showed that although the smoking and smoke break issues touched the majority of the people in SAC and almost every smoker surveyed reported taking smoke breaks, just 27 percent of respondents reported their organization had a smoke break policy. Most of these respondents indicated the policies were lenient in terms of regulating the time and duration of the breaks. Smokers reported spending an average 41.09 minutes per day taking smoke breaks. This figure differed significantly from the amount of time smokers reported other smokers spent taking smoke breaks daily, and the amount of time reported by managers and nonsmokers. Over 96 percent of smokers reported talking about work at least weekly, indicating that smoker networking occurs. Nonsmokers perceived that as average daily smoke break time increased, intergroup conflict and inequity between smokers and nonsmokers increased and smoker productivity decreased. However, stepwise regression run on the variables that determined daily smoke break time failed to account for a significant portion of the variance in nonsmokers perceptions. Therefore, managing the variables that determine daily smoke break time to manipulate nonsmokers' perceptions may not be productive.

THE ORGANIZATIONAL IMPACT OF SMOKE BREAK  
MANAGEMENT IN STRATEGIC AIR COMMAND

I. Introduction

General Issue

The public's growing health consciousness, fueled by reports of harmfulness of environmental tobacco smoke to nonsmokers, has led to demands for smoking restrictions in the workplace (15:223). In response, an increasing number of employers have implemented policies prohibiting smoking in areas shared by smokers and nonsmokers (2:18). These policies differ in severity. While some smoking policies restrict smoking at work altogether, most employer smoking policies permit smokers to take "smoke breaks" periodically throughout the workday (33:62).

While researchers have thoroughly documented the legal issues, public opinion, smoking restriction prevalence and severity, and employee response to restrictions, few have documented how smoking restrictions affect the organization, and almost none have documented how smoke breaks affect the organization.

Specific Problem

In accordance with Air Force Regulation 30-27, Strategic Air Command (SAC) adheres to a strict nonsmoking policy. While the policy specifies where people can smoke in designated smoke break areas, it does not address how smoke breaks should be managed, or even if they should be managed (12:1-4). This lack of formal guidance, combined with

the lack of research into how smoke breaks affect the organization, provide little or no information for managers to base smoke break regulation in the areas they supervise.

### Research Objectives

The overall objective of this research was to provide managers information useful for the deliberate regulation of smoke breaks. Realization of this objective required formulating the following specific research objectives:

1. Describe how managers currently regulate smoke breaks.
2. Determine whether or not a relationship exists between smoke breaks and selected variables that affect the organization. These variables include (a) intergroup conflict and perceived inequity between smokers and nonsmokers, (b) perceived productivity of smokers, (c) job satisfaction, (d) smoker networking, (e) organizational commitment, (f) Strategic Air Command's initiative to eliminate smoking, and (g) organizational climate.
3. Determine the feasibility of manipulating smoke break frequency, duration, and distance to the smoke break area to control the affects of smoke breaks on the selected variables named above.

### Research Questions

To realize the stated research objective, a survey questionnaire was distributed to a sample of Strategic Air Command personnel for the purpose of gathering data to answer the following questions:

1. How do managers currently regulate smoke breaks?
2. Do managers know the smoke break patterns of smokers they supervise?

3. Do nonsmokers perceive smokers spend more time taking breaks daily than they actually do?
4. Does networking occur during smoke breaks?
5. What is the relationship between the average daily smoke break time per smoker and intergroup conflict and perceived equity between smokers and nonsmokers?
6. What is the relationship between the average daily smoke break time per smoker and perceived productivity of smokers?
7. What is the relationship between the average daily smoke break time per smoker and job satisfaction?
8. What is the relationship between the average daily smoke break time per smoker and smoker networking?
9. What is the relationship between the average daily smoke break time per smoker and organizational commitment?
10. What is the relationship between the average daily smoke break time per smoker and Strategic Air Command's initiative to eliminate smoking?
11. What is the relationship between the average daily smoke break time per smoker and organizational climate?
12. If there is a relationship between the average daily smoke break time per smoker and (a) intergroup conflict and perceived inequity between smokers and nonsmokers, (b) perceived productivity of smokers, (c) job satisfaction, (d) smoker networking, (e) organizational commitment, (f) Strategic Air Command's initiative to eliminate smoking, and/or (g) organizational climate, what variables (number of smoke breaks smokers take daily, the time required to travel one way to the

designated smoking area, and the time taken for each smoke break, excluding the travel time) are statistically significant?

### Definitions

Intergroup conflict, perceived equity, perceived productivity, job satisfaction, smoker networking, organizational commitment, initiative to eliminate smoking, and organizational climate are defined as follows.

Intergroup Conflict. Intergroup conflict is behavioral conflict that "occurs when one group does something that is unacceptable to another group" (9:504).

Perceived Equity. Equity refers to the perception of how one is treated compared to others (9:100).

Perceived Productivity. Personnel productivity is a measurement of a person's "output in goods and services per labor hour" (4:30).

Job Satisfaction. Job satisfaction is an employee's perception "that his or her job actually provides what he or she values in the work situation" (9:77).

Smoker Networking. Smoker networking is the establishment and use of an informal communication channel, sometimes called "the grapevine," (9:541) by smokers who routinely meet in designated smoking areas.

Organizational Commitment. Organizational commitment is "the strength of an individual's identification with and involvement in a particular organization" (14:73).

Initiative to Eliminate Smoking. The initiative to eliminate smoking is Strategic Air Command's effort to implement its stated standard "for all SAC active duty personnel not to smoke" (32:1).



Organizational Climate. Organizational climate "is a summary perception which people have about an organization" (14:99).

#### Scope and Limitations

The scope of the research effort extended to military members of Strategic Air Command, both stateside and overseas, excluding general officers and colonels. However, overseas contingency operations may have limited the research by necessarily excluding some people from participating in the survey. Additionally, no data assessing interpersonal conflict and perceived equity, personnel productivity, smoker networking, job satisfaction, or organizational commitment was gathered prior to implementation of smoking restrictions, prohibiting direct comparison to data in these areas generated by this survey.

#### Conclusion

In response to societal pressures, an increasing number of employers are implementing smoking policies at work. Most permit smoke breaks, yet little research has been done regarding the organizational affect of these smoke breaks.

In Strategic Air Command, lack of formal guidance, combined with the lack of research into how smoke breaks affect the organization, provide little or no information for managers to base smoke break regulation in the areas they supervise. Therefore, the objective of this thesis was to provide information for these managers so they can deliberately manage smoke breaks.

## II. Literature Review

### Introduction

The purpose of this review is to summarize current literature related to the recent trend of employers to adopt workplace smoking restrictions. This background is needed by the reader to appreciate how smoke breaks impact the organization. The scope of this literature review is limited to information originating in North America and published since 1986.

The factors influencing employers to implement smoking restrictions are examined first, in the following order: (1) perceived health risks of environmental tobacco smoke, (2) current public opinion concerning workplace restrictions, (3) cost of smoking to employers, and (4) legal issues surrounding workplace smoking. Workplace smoking policies are examined second, in the following order: (1) reasons for adopting smoking policies, (2) smoking policy prevalence, (3) smoking policy severity, and (4) the evolution of the Air Force's policy. The effects of workplace smoking restrictions are examined last, in the following order: (1) employee response to workplace smoking restrictions, and (2) organizational effects of smoke breaks.

### Factors Influencing Employers to Implement Smoking Restrictions

This section describes the factors that influence employers to implement smoking restrictions in the workplace. These factors include the perceived health risks of environmental tobacco smoke, current public opinion, the cost of smoking to employers, and legal issues. A discussion of each of these factors follows.

Perceived Health Risks of Environmental Tobacco Smoke. "Over the past 50 years, the social acceptability of smoking has generally risen, until the early 1970s when the Surgeon General's office released its statement that smoking is a health hazard" (23:21). Shortly afterward, "in 1976, the New Jersey Supreme Court upheld the right of employees to 'perform the duties of their job' without being exposed to smoke from other people's cigarettes" (35:32). Despite this ruling, most employers regulated smoking only in areas containing flammable materials to protect company property and ensure employee safety (15:223; 36:359). Rather than establishing formal smoking policies, employers relied on employees to settle smoking matters (36:359). This trend prevailed until the 1980s, when an increasing

employee awareness of health issues . . . such as the growing interest in physical fitness, concerns about environmental issues and toxic wastes, and continued published reports and advertising by public service organizations about the health effects of smoking (23:21)

led non-smokers to demand smoke-free work environments (15:223; 36:359; 23:21). The Surgeon General's report, "The Health Consequences of Involuntarily Smoking," "aroused a great deal of concern about the health effects of secondhand smoke on nonsmokers" (35:32). Marco L. Colosi, in his article, "Do Employees Have the Right to Smoke?" succinctly summarized the nonsmokers' point of view on the health effects of smoke. He wrote, "the most compelling reason employers should limit smoking is not related to the smokers health, but due to the risk smoke poses to nonsmoker's health" (7:74).

Current Public Opinion Concerning Workplace Smoking Restrictions. Several survey results indicated widespread support for smoking policies at work, but they should be interpreted carefully. For example, a 1990

survey with responses from 6,000 readers of Industry Week indicated "an overwhelming majority of readers (87.4%) agree that companies have the right to control or ban smoking" (2:18), but it appears only about 15% of the respondents were current smokers. Similarly, in a Personnel Journal article, the author reported results of a Gallup poll sponsored by the American Lung Association that "found 80% of former smokers and 92% of non-smokers believe employers should designate smoking and non-smoking areas or ban smoking at work" (6:81). However, the article failed to report whether smokers were surveyed. Last, Business Week reported "a poll at Texas Instruments, Inc. found that 90% of all employees favored policies to protect nonsmokers" (16:43). While this last article indicated all employees were interviewed, it also failed to mention the percentage of employers who smoked.

While non-smokers have become more vocal in their quest for smoking policies, "confirmed smokers have become more vocal in defending their right to smoke while at work" (15:223). Understandably, "tobacco companies argue that courtesy by smokers is a better way to protect nonsmokers at work than formal policies" (16:43).

Cost of Smoking to Employers. In general, costs of employing smokers exceed those of nonsmokers due to higher absenteeism, accident rates, illness rates, medical care costs, health insurance, fire insurance, property maintenance costs (due to burns, providing ventilation, and extra cleaning); the health impact on nonsmoking employees; and reduced productivity (7:73; 19:44; 15:224; 6:80).

While the literature reviewed agreed that it costs more to employ smokers compared to nonsmokers, the actual difference in cost varies with the source. For example, in one issue of Personnel Journal (April

1988), Marco L. Colosi cites the Congressional Office of Technology Assessment that estimated cost per smoker "between \$2,000-\$5,000 yearly" (7:72). Jim Collinson reports "according to William Weis, an associate professor in the Albers School of Business at Seattle University, a smoking employee costs his or her employer an estimated \$5,740 more annually than a non-smoking employee" (6:80). David S. Hames reported in *Employee Relations Law Journal* that a "1987 study . . . estimated that smoking costs employers between \$300 and \$5,000 per smoker" (15:224). The difference in these figures may be explained by the variety of businesses and industries they represent. On a micro level, Blue Cross of Maryland determined in 1987 that their smoking employees cost them \$570.99 per employee annually (19:44).

Legal Issues. Smokers and non-smokers have taken the workplace smoking issue to court. Nonsmokers make

claims in three areas: constitutional claims, based on alleged infringements of First, Fifth, Ninth, and Fourteenth Amendments; statutory claims based on occupational safety, handicap discrimination, and state benefit statutes; and common-law claims based on the employer's duty to maintain a smoke-free workplace. (36:360)

On the other hand, smokers refer to "the Employee Retirement Income Security Act (ERISA), civil rights antidiscrimination statutes, and the National Labor Relations Act" (36:366) to defend their point of view. "In general, courts have shown substantial reluctance to intervene in the workplace by ordering broad restrictions on smoking. . . Virtually all courts addressing the smoking issue have recognized the need to consider the rights and interests of smokers as well as nonsmokers" (36:371).

Constitutional Claims. Claims that the United States Constitution guarantees rights either to a smoke-free workplace or the right to smoke at work have consistently been rejected in federal and state court (38:18; 36:360). As the Tenth Circuit succinctly stated in *Kensell v. State of Oklahoma*, 716 F.2d 1350 (10th Cir. 1983):

We are certain . . . that the United States Constitution does not empower the federal judiciary . . . to impose no-smoking rules in the plaintiff's workplace . . . Similarly, the Tenth Circuit, in *Grusendorf v. City of Oklahoma City*, 816 F.2d 539 (10th Cir. 1987), held that the United States Constitution does not support a smoker's right to smoke. (36:362)

Claims Based on the Occupational Safety and Health Act.

Claims that the Occupational Safety and Health Act "provides a basis for restrictive smoking in the workplace . . . appears to provide no support to individual employee plaintiffs" (36:363). The Occupational Safety and Health Act requires government agencies to "provide safe and healthful places and conditions of employment" (36:363) and "private employers to furnish "employment and a place of employment . . . free from recognized hazards that are causing or are likely to cause death or serious physical harm to [their] employees" (36:363). However, "there is substantial judicial disagreement over whether ETS [environmental tobacco smoke] harms the health of nonsmokers" (36:363).

Claims Based on Handicap Discrimination and State Benefit Statutes. Some people hypersensitive to tobacco smoke claim handicap discrimination according to the Rehabilitation Act of 1973 against employees failing to protect them against environmental tobacco smoke. When extreme hypersensitivity is demonstrated, and an employer fails to provide reasonable accommodation, some of these claims have been upheld (38:18; 36:363-364). Courts have rewarded unemployment compensation to

employees forced to leave jobs due to hypersensitivity, but have not provided disability benefits after categorizing the disability as an environmental, not a physical, limitation (36:365). However, courts reject most cases

for a number of reasons: (1) rulings by many courts that federal laws protecting the handicapped are not applicable to the private sector; (2) refusals by the courts to characterize smoke sensitivity as a legal handicap; (3) lack of proof by the complaining employee that he or she was actually discriminated against because of the alleged handicap; and (4) an ability on the companies' part to show that they either tried to accommodate affected individuals or could not do so because accommodation would have resulted in undue hardship to their businesses. (38:18)

Common-Law Claims. Courts have not upheld the claim that an employer's common-law duty to provide a safe working environment includes providing a smoke-free environment. Currently, the courts hold employers responsible only for providing for the reasonable safety of "normal" persons. Therefore, until environmental tobacco smoke is proven hazardous to "normal" persons, "judicially imposed smoking restrictions would appear unsupportable by common law" (36:371).

The Employee Retirement Income Security Act. Section 510 of this act prohibits employers from discharging smokers to save money on employee health insurance (36:366).

Civil Rights Antidiscrimination. Studies indicate more blacks than whites smoke. Therefore, employers with restrictive smoking policies who refuse to hire smokers or who segregate nonsmokers and smokers could be charged with unlawful discrimination. However, courts have dismissed minority smokers' claims of discrimination when employers proved smoking policies were enforced universally (36:366-367).

National Labor Relations Act and Unions. The National Labor Relations Act requires employers with unionized employees to bargain

with the union prior to implementing workplace smoking policy. Employers wrestle with trying to comply with state or local ordinances that mandate smoking restrictions and negotiating smoking rules with unions, made especially difficult by the AFL-CIOs declared stance against smoking legislation (36:367,378). "Even when a collective bargaining agreement includes a broad 'management rights' clause permitting the employer to establish plant rules, those rules may be subject to tests of reasonableness and nondiscriminatory application" (36:367). However, despite arbitrators finding that employers must negotiate prior to implementing or modifying policy (15:225), "if special circumstances, such as the risk of fire or diminished productivity, are sufficiently compelling, employers may proceed with policy changes and modifications without negotiating them" (15:227).

State and Local Smoking Restrictions. Aggressive state and local legislation restricting workplace smoking opposes the cautious judicial response to this issue (36:371). In 1901, state restrictions on smoking peaked as 12 states banned or limited smoking and cigarette sales. These laws had all been repealed by 1927 (38:17). "Today 16 states and more than 350 localities require at least some smoking restrictions in the workplace of private business. And a total of 32 states have regulations pertaining to state employees smoking in the workplace" (35:32).

The requirements imposed by these laws vary substantially. Some laws require that employers adopt written policies, but are silent with respect to the contents of these policies. Other laws require that employers reasonably accommodate smokers. Still others prohibit employers from disciplining or discharging employees for filing complaints about smoking in the work place. There are no federal smoking laws governing employment. (15:224)



Of these laws, "many suffer significant practical shortcomings and potential legal infirmities, particularly those that attempt either to restrict smoking severely or to ban it entirely" (36:360). "The 'most directive' laws not only dictate the physical requirements for smoking and nonsmoking areas, but also may grant nonsmokers virtual veto power over employer smoking policies by granting preferential treatment to the nonsmoker" (36:374).

Although many state and local governments are requiring employers to formulate smoking policies, these bodies have offered employers little guidance in how to shape a reasonable policy. Balancing smokers' and nonsmokers' needs with company business necessity is clearly no easy task. (15:223)

#### Workplace Smoking Policies

A review of current literature clearly indicates an increase both in adoption of workplace smoking policies and in policy severity. This section examines workplace smoking policies in terms of reasons for adopting smoking policies, smoking policy prevalence, smoking policy severity, and the evolution of the Air Force's policy.

Reasons for Adopting Smoking Policies. Reasons for adopting smoking policies include "in order of importance, employee complaints, concern about employees' health, and state and local laws" (33:64). Vaughn cites threat of lawsuits initiated by nonsmokers and charges of discriminatory treatment as other reasons influencing employers to implement smoking policies (36:360, 379), although he cautions "reasonable accommodation of both smoking and nonsmoking employees . . . is not necessarily best accomplished by a formal policy" (36:375).

Smoking Policy Prevalence. Recent figures concerning percentages of employers with formal workplace smoking policies vary, probably due

to the variety of company types sampled. The most recent surveys report higher percentages, indicating a growing trend to implement smoking policies. For example, the Harvard Business Review reported in 1987 "some 36% of American companies have decided to control or prohibit employee smoking" (19:44). According to the April 1988 issue of Personnel Journal:

Poll results published in the April 1987 issue of ISBE Employer Advocate reported that 42% of responding US companies had formal smoking-restrictive policies, and an increasing number of companies are studying the issue every year. Another survey conducted by the Dartnell Institute of Business Research found that only 30% of US firms have some type of limitations on smoking. (6:80)

Another article in the same issue of Personnel Journal reported a Bureau of National Affairs survey discovered "smoking policies regarding employee health or comfort has [sic] been adopted by 31% of the survey group" (7:74). A questionnaire surveying banks, data processing firms, savings and loan associations, utilities, and insurance carriers reported "among all responding companies, 68% had a smoking policy in 1987" (33:63). The same survey determined "only 24% of the firms will not have a smoking policy in 1990; this figure will fall to 18% by 1995" (33:64). Last, Industry Week compared 1990 survey results to a similar survey conducted in 1986 and discovered the percentage of employers restricting workplace smoking increased from 32.3% to 71% (2:18).

Most of the workplace smoking policies have been implemented recently. For example, employers responding to one survey reported "more than two-thirds of the policies were put into effect in or after 1986" (33:64). The 1990 Industry Week survey reported similar results. Of employers with workplace smoking restrictions, "41.15% have had

restrictions in place for only one to two years, while 25.87% have adopted rules within the last year" (2:18).

Smoking Policy Severity. Workplace smoking policies differ in severity, and literature indicates a trend toward implementing more severe policies. J. Carroll Swart, associate professor of management at Ball State University, described seven different workplace smoking policies on a continuum labeled from Policy A to Policy G. Policy A, the most restrictive, hires only nonsmokers (prohibiting smoking both on and off the job). Policy B prohibits smoking on company premises. Policy C prohibits smoking in company buildings. Policy D prohibits smoking in company buildings, with few exceptions. Policy E prohibits smoking in common areas except those designated "smoking permitted." Policy F permits smoking and relies on employees to resolve conflicts. If compromise cannot be found, nonsmokers' preference prevails. Policy G places no restrictions on employee smoking (33:62). The two most widely adopted smoking policies among surveyed employers in 1987 were policy D (39.2%) and policy E (26.3%). The survey predicted an increase in policy severity by 1995, with the two most prevalent policies being policy D (28.5%) and policy C (27.0%). Policy A's frequency was predicted to climb from 1.2% in 1987 to 6.7% in 1995 (33:63). Of note, this predicted figure of 6.7% is lower than that currently reported in other surveys for this "most restrictive" policy. For example, one survey describing different smoking policies discovered that among the different policies in effect, "8% ban smoking anywhere" (7:74). Another survey reported that "no-smoking policies in general are becoming more stringent. Whereas 91.6% of companies with policies allowed smoking in certain areas in 1986, only 86.71% currently do so" (2:19).

Air Force Policy. The Department of Defense Directive 1010.10 issued on 11 March 1986 stated the creation of a healthy working environment as one of its objectives (12:1). In 1987, the Air Force was directed by the Department of Defense (DoD) "to reduce smoking by 10%" (3:1) and the January edition of the Air Force Policy Letter for Commanders reported "a recent review by the secretary of defense of proposed goals and objectives for the DOD smoking reduction program concluded that the Services must be more aggressive in eliminating this serious hazard to health and military readiness" (11:3). On 19 July 1988, Air Force Regulation 30-27, Smoking in Air Force Facilities, was issued to detail its policy regarding smoking (12:1-3). This policy decrees "nonsmoking is the acceptable organizational norm" and restricts smoking to designated areas (12:1). The policy did not address how smoke breaks should be managed, or specify limits on the number and duration that smokers can take daily.

Strategic Air Command Policy. In Strategic Air Command, an anti-smoking campaign was launched in January 1987 in response to the 1987 DoD directive. The campaign heavily emphasized leadership by example and stressed smoke-free work environments through education, formal smoking cessation classes, and smoking policies. Monthly reporting of senior staff members' smoking cessation efforts began in April 1987. This report was expanded the following September to include squadron commanders, and again in October to include all colonels, lieutenant colonels, and chief and senior master sergeants within the command. In January 1988, the reporting interval was changed from monthly to quarterly, and format was changed to include master sergeants (3:1). To implement its nonsmoking policy, Strategic Air Command

supplemented Air Force Regulation 30-27 with SAC Supplement 1, issued on 28 August 1989 (32:1). This supplement makes no smoking or use of tobacco products the standard within the command; prohibits smoking in private offices, SAC vehicles, and SAC aircraft; encourages smokers to quit smoking; expects supervisors to lead smoking cessation by example; and establishes a requirement and procedure for reporting the number of smokers command-wide (32:1; 20:1). However, it does not address how smoke breaks should be managed, nor specify limits on daily number and duration of breaks.

Negotiations between Strategic Air Command and the union representing the command's civilian employees regarding designated smoking areas were still underway in October 1990. At that time, 14 SAC bases permitted smoking only outside with no exceptions, seven bases permitted smoking outside with limited exceptions, and three bases were still negotiating smoking restrictions. However, labor relation disputes were still pending at six bases (24:1).

The results of Strategic Air Command's anti-smoking initiative are tracked through the command-wide Tobacco Use Survey. The October 1990 smoking report indicated that the percentage of officers who smoke decreased from 9 percent to 6 percent since October 1988, and the percentage of enlisted who smoke decreased from 29 percent to 27 percent over the same period (3:5).

#### Effects of Workplace Smoking Restrictions

Restricting smoking in the workplace can affect all employees, regardless of whether they smoke. Therefore, the implementation of smoking restrictions can result in an employee response that can affect

the organization. This section examines the consequences of workplace smoking restrictions in these terms. A discussion of employee response to workplace smoking restrictions and the organizational effects of smoke breaks follows.

Employee Response to Workplace Smoking Restrictions. Vaughn warns that workplace smoking policies may result in "perceptions of unequal treatment" (36:376) and "employee animosity" (36:375). He also warns that "dividing offices, rearranging work stations, and erecting physical barriers will have an obvious impact on productivity, morale, and an employer's bottom line" (36:375). Other literature seems to dispute Vaughn's warnings. For example, Personnel Journal reports that a Bureau of National Affairs survey discovered:

Employee reaction to smoke-restrictive policies appears to be either supportive or noncommittal; 54% of the employers indicated smokers generally supported the smoking restrictions; 10% approved the policies and 20% reported smokers had no reaction. Ironically, experts note that the worst tensions occur before precise restrictions are promulgated because smokers and nonsmokers are unclear on the rules and/or their rights. (7:74)

Also, in 1985, some Pacific Northwest Bell Telephone Company executives feared that a planned workplace smoking policy would "prompt protests, lawsuits, and an exodus of loyal workers" (16:42). However, contrary to their expectations, after policy implementation, no one resigned or filed lawsuits, yet most of the company's 4000 smokers reduced their smoking and 350 employees quit smoking altogether (16:42). Blue Cross of Maryland reported similar results. After implementing a smoking policy banning smoking at work, no employee quit and most smokers either smoked less or quit. "At the end of two years, however, the numbers of die-hard smokers remained unchanged" (19:44).

Organizational Effects of Smoke Breaks. Very little literature addresses how smoke breaks impact the organization, despite the most prevalent policy in force today permitting smoking only "in specially designated smoking rooms (smoking lounges)" (33:62).

Only one source addressed frequency of smoke breaks, specifically referring to an arbitrator's decision that a company had the right to limit its employees' smoking breaks to "just before the start of a shift, during the lunch break, or during the two 10-minute scheduled breaks" (7:78).

The remaining literature addressed productivity loss and nonsmoker resentment concerning smokers taking smoke breaks. An Industry Week survey reported employees of companies that permit smoking only in designated areas "question the productivity levels resulting from increased and longer breaks" (2:19). William Weis, associate professor in the Albers School of Business at Seattle University, claims smokers cost employers an average of \$2,275 each per year in lost productivity due to "30 minutes a day lost to smoking breaks and smoking rituals" (6:80). A 1989 survey of employees at a military hospital determined "time lost from smoking breaks amounted to 49.5 minutes per day per smoker" (25:60) and "over 70% of the respondents agreed that productivity suffers because of frequent smoking breaks" (25:45). The same survey reported "additional concern (if not downright anger) was expressed by many nonsmokers required to take up the slack of smokers absent from their duties for smoke breaks" (25:60).

## Conclusion

This literature review examined North American sources reporting a recent trend by employers to implement smoking restrictions in the workplace. No literature published prior to 1986 was reviewed.

This trend results from several factors. First, a growing public health consciousness fueled by reports from the Surgeon General and others has led to the perceived health risk of environmental tobacco smoke. Second, the general public believes that employers have the right to, and should, impose smoking restrictions in the workplace. Third, in the competitive environment facing employers today, additional costs attributed to smoking employees provide practical basis for many employers implementing workplace smoking restrictions. Last, although courts have been reluctant to support alleged rights of nonsmokers to a smoke-free work environment, some state and local legislation demand employers impose workplace smoking restrictions. These demands present special legal problems for employers forced to negotiate with unions because union sentiment generally opposes smoking restrictions.

After examining the factors influencing employers to implement smoking restrictions, this review focused on workplace smoking policies. "Employee complaints, concern about employee's health, and state and local laws" are reasons why employers adopt workplace smoking restrictions (33:64). Survey results indicate the trend to implement smoking policies is recent, and that smoking policy prevalence and severity are increasing. Since 11 March 1986, the Air Force has had a policy restricting smoking in the workplace.

Last, effects of workplace smoking restrictions were examined. At least one writer warned that smoking restrictions could have negative



effects on employees and the organization. Some employers who implemented smoking restrictions found smokers either supported or reported indifference to the workplace smoking restrictions, some smokers reduced their smoking or quit altogether, and no smoker quit his or her job. When smokers take breaks to smoke at work in designated areas, the perception of lost productivity exists and some nonsmokers feel resentment. Thus, smoke breaks may impact the organization negatively.

### III. Methodology

#### Introduction

This chapter describes the methodology used to achieve the objectives of this thesis and to answer the research questions posed in Chapter I. Specifically, this chapter justifies the use of a survey to collect the data, discusses the survey instrument, describes the population and sample, explains the data collection plan, and describes the data analysis plan.

#### Justification

The overall objective of this thesis was to provide managers information useful for the deliberate regulation of smoke breaks. To realize this objective, this thesis sought to (1) describe how managers currently regulate smoke breaks, (2) determine whether or not a relationship exists between smoke breaks and selected variables that affect Strategic Air Command, and (3) determine the feasibility of manipulating smoke frequency, duration, and distance to the smoke break area to control the affects of smoke breaks on the selected variables. A survey questionnaire was selected as the data collection means after considering its relative advantages and disadvantages.

Advantages. While observation could determine how managers regulate smoke breaks and provide data describing smoke break frequency, duration, and distance to the smoke break area, it would fail to determine attitudes or perceptions regarding the variables used to measure how smoke breaks affect the organization. However, an ex post facto design could provide all the data required to extract this

information. In fact, according to Emory, "abstract information of all types can be gathered only by questioning others" (13:158). This abstract information includes personal attitudes (13:159), the importance of which Daft and Steers succinctly express:

Attitudes influence behavior. Much of how we behave at work is governed by how we feel about things. It follows that an awareness of attitudes can assist managers in understanding human behavior at work. (9:63)

Because attitudes influence worker behavior and worker behavior affects the organization, evaluating workers' attitudes about an issue can provide insight into how that issue affects the organization.

In addition to providing all the data required, ex post facto design better satisfied the time and financial constraints (13:158) under which this thesis was written .

Disadvantages. While the advantages of surveying dictated its use for data gathering in this thesis, surveying also has some inherent disadvantages. Its major weakness as cited by Emory is "that the quality of the information secured depends heavily on the ability and the willingness of respondents to cooperate" (13:158-159). Of particular concern regarding this survey is that sensitive topics--such as the smoking issue in SAC--can result in nonresponse by some people. Additionally, misinterpretation of questions or concepts can produce a frame of reference causing respondents to view those questions differently than intended (13:159).

#### Survey Instrument

To gather the data required to accomplish the objectives of this thesis, a survey questionnaire was used. In general, an apparent lack of previous research specifically concerned with smoke breaks required

the development of a new questionnaire. An exception was one used by Major Mark E. Kain to gather data for his thesis, "The Impact of a Nonsmoking Policy on a USAF Medical Center" (25:66-78). Some questions from the Kain questionnaire addressed smoke breaks and were included in the new questionnaire. Additionally, it included questions regarding job satisfaction, organizational commitment, and organizational climate provided by Charles Hamilton, Chief of the Air Force Personnel Survey Branch. The following discussion corresponding to the four parts of the survey provides the reader with an overview of the survey instrument.

Part I. Part I, "Background Information," contained five multiple choice questions to provide demographic information about the respondents. This information was used to describe the sample and to measure sample validity by comparing results to demographic information provided by Headquarters Strategic Air Command that described the sampling frame. Specific questions requested respondents to disclose their age, grade, current smoking status, and the number of people they supervise.

Part II. Part II, "Questions Regarding Smoke Break Policy," was designed to solicit data to determine how managers currently regulate smoke breaks and to describe smoke breaks. This part contained 20 multiple choice questions distributed within three sub-parts. The first, Part IIA, consisted of eight questions answered by everyone. The second, Part IIB, consisted of four questions answered only by smokers. The third, Part IIC, consisted of eight questions answered only by managers. The intent of sub-parting this section was to determine if responses to some questions differed between (1) managers and non-managers and (2) smokers and nonsmokers.

Specifically, some questions solicited information to describe smoke breaks according to the number of breaks taken daily, the time required to travel to the nearest smoke break area, and the average duration of smoke breaks. Other questions solicited information to describe how managers regulate smoke breaks. Each respondent was asked whether or not a policy regulating smoke breaks existed within his or her organization, who initiated the policy, who enforced the policy, and how well the policy was enforced. Additionally, managers were asked whether or not they have a smoke break policy and, if so, to describe it in terms of the time period and number of breaks they permit for smoking. Managers were also asked to describe the actual frequency and duration of the smoke breaks taken by the people they supervise.

Part III. Part III, "General Smoking and Smoke Break Questions," was designed to determine level of consciousness and solicit data required to determine whether a relationship exists between daily smoke break patterns and selected variables that affect the organization. It was subdivided into two parts. The first, Part IIIA, consisted of four questions answered by everyone. The second, Part IIIB, consisted of two questions answered only by smokers. Specifically, of the six questions asked in Part III, three were asked to determine the level of consciousness of respondents. According to Labaw, "determining levels of consciousness helps identify whether people are aware of what they are saying or doing" (26:63). In essence, if respondents have experienced the phenomenon, then the more conscious thought the respondent has given to it and the more meaningful the response. Therefore, these questions identified respondents with no direct experience with the smoking issue, resulting in the exclusion of their responses to the attitudinal

questions. The other questions in Part III solicited data to partially determine how smoke breaks affect the organization. One regarded productivity and two smoker networking.

Part IV. Part IV, "Attitudinal Questions," was designed to solicit data to determine how smoke breaks affect the organization relative to selected variables. This part contained 23 questions answered by everyone. The first three questions were multiple choice and the remaining 20 questions were answered on a Likert scale.

Specifically, of the 23 questions asked in Part IV, the three multiple choice questions regarded job satisfaction. Of the 20 Likert scale questions, five regarded intergroup conflict and equity, and three each regarded personnel productivity, smoker networking, organizational commitment, the initiative to eliminate smoking, and organizational climate. Possible responses on the Likert scale were:

- 1 = strongly disagree
- 2 = moderately disagree
- 3 = slightly disagree
- 4 = neither agree or disagree
- 5 = slightly agree
- 6 = moderately agree
- 7 = strongly agree.

Survey Validity. Of the 54 questions asked in this questionnaire, nine were provided by the Air Force Personnel Survey Branch, and 14 were from the questionnaire used by Major Mark E. Kain to gather data for his thesis. Kain credits his thesis advisor, Lieutenant Colonel John Ballard, as the primary author of his survey instrument (25:29).

The remaining 31 questions were original. Question construction and survey design evolved from guidelines presented by Patricia L. Labaw in *Advanced Questionnaire Design* and C. William Emory in *Business Research Methods* (13:207-223). A pretest of the questionnaire was

administered to 18 captains and lieutenants enrolled in the graduate logistics management program of the School of Systems and Logistics, Air Force Institute of Technology (AFIT), Wright-Patterson AFB Ohio, who were familiar with SAC's smoking policy due to previous assignments in that command. Their suggestions were included in the final draft of the questionnaire. The completed questionnaire was reviewed and approved by the Department of Communication and Organizational Sciences, the Survey Control Officer at the Air Force Institute of Technology, and the Chief of the Personnel Survey Branch, Air Force Military Personnel Center, Randolph AFB, Texas. One major revision of the survey was required.

#### Population and Sample

This section describes the population and sample in terms of the five elements Emory cites as critical to sample design. These elements are the relevant population, sampling frame, parameters of interest, type of sample, and sample size (13:283).

Relevant Population. Strategic Air Command was selected as the source from which to define the relevant population for two reasons. First, it is an established organization guided by clearly established policies designed to standardize procedures throughout the organization. This high degree of standardization provides for a more homogeneous sample than that from an organization characterized by a high variability between its sub parts. Second, Strategic Air Command has had an anti-smoking campaign since January 1987 (3:1) governed by a written policy (12:1-4; 32:1). The requirement for an anti-smoking campaign and written policy was considered a necessary condition by this researcher for adequate formulation of the attitudinal opinions measured.

Having selected Strategic Air Command as the organization of interest, the population of interest for this research was defined as the military members of the command based in the continental United States and overseas from the rank of airman basic (E-1) through lieutenant colonel (O-5). The population of interest did not extend to military members from the rank of colonel (O-6) to general (O-10) for two reasons. First, this author felt the probability of survey response from officers in these ranks was small. Second, according to 31 December 1990 SAC manning reports, these officers comprised only .48 percent of total SAC manning (21:1; 22:1). This author determined exclusion of the higher ranking officers would not skew results and generalizability across the command. In addition to excluding these officers, the population of interest did not extend to civilians in SAC. Inclusion of civilians would have required additional administrative procedures that could have delayed data collection beyond the time constraints under which this research was conducted.

Sampling Frame. The sampling frame consisted of military members assigned to Strategic Air Command from the rank of airman basic (E-1) through lieutenant colonel (O-5) listed on the ATLAS data base at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio, as of 17 May 91.

Parameters of Interest. Within the population of interest, four primary subgroups of interest existed:

- 1) managers
- 2) workers
- 3) smokers
- 4) nonsmokers.



As defined in this thesis, the subgroups of managers and workers were mutually exclusive, as were the subgroups of smokers and nonsmokers. The intersection of managers and workers with smokers and nonsmokers formed the following secondary subgroups of interest:

- 1) managers who smoke
- 2) managers who do not smoke
- 3) workers who smoke
- 4) workers who do not smoke.

Type of Sample. A random stratified proportional sample was drawn to gather data for this research. Stratification was based on the mutually exclusive managers and workers subgroups of interest. As defined by this thesis, people from the rank of technical sergeant (E-6) to lieutenant colonel (O-5) could be managers. Consequently, people below the rank of technical sergeant were necessarily categorized as workers.

Sample Size. Originally a sample size of 3371 was calculated based on the following parameters:

- 1) A desired confidence level and interval of 90 and 10 percent respectively for each sub-group of interest.
- 2) An estimated survey return rate of 50 percent (10).
- 3) The smallest sub-population of interest to this research (smokers who manage).

Based on the confidence level stated above, the minimum number of respondents required from each subgroup of interest was calculated using the following formula from "A Guide for the Development of Attitude and Opinion Survey:

$$n = \frac{N (z^1)^2 \times p(1-p)}{(N-1) (d^1)^2 + (z^1)^2 \times p(1-p)}$$

where:

n = sample size  
N = population size (81444)

p = maximum sample size factor (.50)  
d = desired tolerance (.1)  
z = factor of assurance (1.645) for 90% confidence  
level (37:2)

Thus, n is equal to 67.59, rounded to 68.

A spreadsheet analysis using demographic information provided by Strategic Air Command revealed that a sample size of 3371 was required to include at least 68 people from the smallest subpopulation of interest. This number was rejected as prohibitive by the Air Force Personnel Survey Branch (17:1). A sample size of 565 was agreed upon, based on a reanalysis of the demographic information to ensure that at least 68 smokers were included among respondents. However, this sample size would not generate the required response to provide enough respondents in each of the secondary groups of interest.

#### Data Collection Plan

This section provides the details of how data was collected and grouped, describes how data validity was ascertained, discusses the variables of interest in this research, and reveals assumptions made and limitations expected about the data.

Data Collection. Survey recipients were randomly selected based on the last two digits of their social security numbers by the ATLAS data base at Wright-Patterson AFB, Ohio. On 13 June 1991, each recipient was mailed a cover letter explaining the nature of the survey, the survey, an AFIT Data Collection Form 11C for response recording, and a pre-addressed envelope for response return. The section of the survey entitled "General Information" clearly indicated participation in the survey was voluntary and the identity of respondents would not be known. A copy of the cover letter, Privacy Act statement, and questionnaire are included in Appendix A. Deadline for response return was set at no later than three days after receipt. Two

hundred thirty eight of the 565 surveys distributed were returned for a 42.12 percent response rate. Of these, six were rejected for failing to provide data either used to classify respondents as either a smoker or nonsmoker, or for screening them for inclusion in the attitudinal analysis.

The lower than expected return rate may be explained by the sensitive nature of the subject (13:210). It produced 58 responses from smokers rather than the 68 required to achieve the desired confidence level and interval of 90 and 10 percent, respectively. This number corresponds to an actual confidence level and interval of 89.38 and 10.62 percent, respectively. The other sub-groups of interest, managers and nonsmokers, were represented by more than 68 respondents each.

Data Grouping. Data was blocked according to the smoking status of each respondent. Therefore, responses were sorted either into those provided by "smokers" or those provided by "nonsmokers." These groups are mutually exclusive.

Evidence of Data Validity. Statistics describing the demographic data were compared to actual demographic data supplied by SAC to determine how well the actual population was represented by the sample gathered. This was accomplished by comparing the grade distribution of the sample to the population and by comparing the percentage of smokers by grade in the sample to the percentage of smokers by grade in the population.

Variables of Interest. The following discussion identifies the independent and dependent variables of interest to this research.

Independent Variables. The independent variables of interest hypothesized to affect the organization relative to selected dependent variables were (1) number of smoke breaks, (2) the length of the smoke break itself, and (3) the enroute time to the nearest designated smoke break area.

To produce an overall, single measurement to categorize smoke breaks, these independent variables were combined according to the following formula:

$$SB = N * ((2T) + L))$$

where:

SB = daily smoke break time

N = number of smoke breaks daily

T = one way travel time to the smoke break area

L = average length of the smoke break itself

Dependent Variables. The dependent variables of interest in this research included intergroup conflict and perceived inequity, perceived productivity of smokers, job satisfaction, smoker networking, organizational commitment, the initiative to eliminate smoking, and organizational climate. An examination of each of these dependent variables and its potential affect on the organization follows.

Intergroup Conflict and Perceived Inequity. Intergroup conflict and the concept of perceived inequity are closely linked. Intergroup conflict can result if differences in status between individuals or groups exist (9:505). The idea of difference in status is linked to the concept of equity, referring to the perception of fair treatment compared to that given to others (9:100). Perceived inequity creates tension in the individual, who attempts to reduce it. Two methods of resolution negatively affect the organization. People may either quit, or increase their absenteeism and/or decrease their work output (9:100-101).

If smokers or nonsmokers perceive the opportunity to take smoke breaks results in inequity or a difference in status between them, then the organization may be affected negatively.

Perceived Productivity. Previous research reported that smoking policies may result in lost productivity (25:56). However, it remains unclear whether or not lost productivity results from otherwise productive

time lost to smoke breaks, the inability of smokers to work at peak performance when they cannot smoke at their work stations, or a combination of the two.

Since "productivity is under management control and hence is a key concept in evaluating performance of a firm and the operations function within it" (4:30), the relationship between productivity and smoke breaks may be of concern to managers interested in controlling productivity. If the current management of smoke breaks results in, or contributes to, lost productivity, then the organization may be affected negatively.

Job Satisfaction. The relationship of job satisfaction to personnel turnover and absenteeism has resulted in its use as an indicator of an organization's effectiveness (9:81). Job satisfaction

may be influenced or affected by . . . recognition or acceptance by coworkers and peers, supervisors and subordinates; . . . safe, healthy, and pleasant working conditions and environment; and organizational goals and policies. (1:486)

Given these influencing factors, job satisfaction related to smoking becomes a complex issue. Dissatisfaction may result if smokers perceive either nonsmokers or smoking policies discriminate against them. On the other hand, smoking policies may increase the job satisfaction of nonsmokers if they perceive smoke-free areas result in healthier, more pleasant, working conditions. Despite the complexity of the issue, high job satisfaction may positively affect the organization, and low job satisfaction may negatively affect the organization.

Networking. Networking refers to the informal lines of communication in an organization. Daft and Steers credit these networks as a vital source of communication to people at all levels in the company because the networks can quickly dispense information otherwise unavailable through

formal channels, with a 75 to 95 percent accuracy. Daft and Steers caution managers against eliminating these networks, advising them to use the networks to complement official information instead (9:541-542). Therefore, if smokers who meet regularly during smoke breaks establish informal lines of communication that management can use to dispense information, then smoke breaks may positively affect the organization.

Organizational Commitment. Organizational commitment may be a better predictor of turnover than job satisfaction, because it is formed over a longer period of time and is more global than job satisfaction. Therefore, concern with the level of organizational commitment is important in dealing effectively with turnover (14:72-73).

Perception That Smoke Breaks Encourage Smoking. One specific goal of Strategic Air Command is the elimination of smoking by its members. Air Force Regulation 30-27 establishes non-smoking as "the acceptable organizational norm" (12:1). The SAC supplement to this regulation reiterated this norm and "strongly encouraged" people who smoke to quit (32:1;20:1). Reports on the progress of the anti-smoking campaign to the Commander-in-Chief, Strategic Air Command (CINCSAC) from the SAC surgeon general indicate the seriousness of the initiative (3:1-2). Given the initiative to eliminate smoking since 1987, it is reasonable to assume that smoke breaks may negatively affect the organization if they encourage some people to smoke. If "the effectiveness of an organization is ultimately determined by its success at achieving specified goals" (9:319), then smoke breaks that encourage people to continue smoking may undermine the command's overall effectiveness.

Organizational Climate. Likert considered organizational climate one of the five key elements central to an organization's success (14:12).

Because it is "a manifestation of the attitudes of organizational members (all employees) toward the organization itself" (14:95), it can affect behavior (14:94). Organizational climate is influenced by the reciprocal effect, described as employee response to the work environment (14:99). As such, it "is extremely important to the ultimate achievement of company goals and is, therefore, a concept management can ill afford to ignore" (14:107). Organizational effectiveness is enhanced when organizational climate "creates within employees the feeling that the company is concerned with their ideas, involvement, and participation" (14:13). Therefore, management can improve organizational effectiveness "by making adjustments in any or all of the components which influence climate" (14:106). These components include organizational context, organizational structure, process, physical environment, and systems values and norms (14:95). Prior to making changes, however, a measure of current organizational climate should be taken so that strategies can be tailored "to improve upon it so that operating goals may be more easily and realistically reached" (14:106).

Given this discussion of organizational climate, it seems logical that consciously managing smoke breaks could improve Strategic Air Command's effectiveness if a relationship between smoke breaks and organizational climate exists.

Assumptions. In this research, the sample size from which data was gathered permitted the assumption that the sample's mean was normally distributed per the Central Limit Theorem (27:319). Furthermore, this research treated smokers and nonsmokers as independent groups (29:175).

Limitations. The scope of this research was limited by world-wide contingencies requiring the deployment of Strategic Air Command personnel to remote overseas locations. If these people were selected as survey recipients

by the ATLAS data base, surveys would be sent to their permanent rather than their deployed addresses. Therefore, they would not receive surveys in time to respond by the established deadline, causing the survey return rate to decline.

### Data Analysis

This section describes the plan employed to analyze the data produced by the survey. A discussion of the level of data gathered and the software programs used to analyze it follows.

Data Level. Dependent on the particular question, the range of responses in the survey instrument were either on a nominal, ordinal or interval scale and measured on a discrete scale (29:6).

Questions soliciting data on a nominal scale were numbers 5 through 9, 14, 18, and 22 through 29 (13:87-88). Question 5 solicited demographic information, and the remaining questions sought information describing smoke breaks and policies. Nonparametric statistics were selected as the only appropriate means to measure and describe the results of these questions (13:359).

Questions soliciting data on an interval scale were numbers 1 through 4, 11 through 17, and 19 through 21. Questions 1 through 4 solicited demographic information, and the remaining questions solicited information describing smoke breaks. This data was analyzed using parametric statistics (13:358).

The remaining questions solicited data on an ordinal scale and were designed to determine whether or not a relationship exists between smoke breaks and selected variables that affect the organization. Nonparametric



statistics were used to measure and describe the results of these questions (13:89,258,359).

Software and Program Options. All data from the survey was analyzed using SAS System software installed at the Air Force Institute of Technology, Wright-Patterson AFB, Ohio. Appendix B contains a copy of the computer listing of responses to the survey questionnaire. The following discussion describes program options available in SAS that were used in this research.

PROC UNIVARIATE. Because of the extensive summary PROC UNIVARIATE produces and its ability to handle nominal, ordinal, and interval data, it was used to provide the descriptive statistics for this research (29:70-71). It produces output "in four sections, with headings: Moments, Quantiles, Extremes, and Missing Value" (29:71). Moments is particularly applicable for the summary of interval data. Its output includes the number of observations with nonmissing values for the variable being summarized, the arithmetic average, and the number of nonmissing values equal to zero (29:72-73). Additionally, Moments provides the signed rank statistic corresponding to the Wilcoxon Signed Rank test (29:204-205). This test "is a nonparametric analogue to the paired-difference t-test" (29:204). Quantiles describe data distribution according to quartiles, median, range, and mode (29:73).

PROC CHART. In addition to providing the above information, SAS includes a PROC CHART procedure that "graphically represents the distribution of values for a variable" (29:82). The HBAR (horizontal bar) option was used to summarize data because it produced a graphical representation and summarized "the frequency, cum frequency, percent, and cum percent for the values in each bar" (29:93).

PROC FREQ. The TABLES option to the PROC FREQ program provided a way to describe responses to some questions and to determine if a relationship

existed between smoke breaks and selected variables. The option produces tables that describe data in terms of frequency, percent, cumulative frequency, and cumulative percent (29:79-81). Many of these tables were reproduced in Chapter IV.

To determine if a relationship exists between smoke breaks and selected variables that affect the organization, independence was tested using the Chi-square test (5:44-46) by applying "the CHISQ option to the TABLES statement" (29:368). To determine the existence and strength of trends among the variables under study, Kendall's tau was used as the measurement of association for these questions when the Chi-square test indicated they were statistically dependent at the 5 percent significance level (29:372-377). Compared to the Pearson product moment coefficient of correlation used with parametric data, Kendall's tau and Spearman's  $r_s$  "have the same power efficiency (91 percent) in testing for the existence of a relation in the population" (30:239). However, Kendall's tau "can be generalized to partial correlation coefficients" (13:389) and it has "a sampling distribution which is practically indistinguishable from a normal distribution for sample sizes as small as 9" (30:239). Kendall's tau ranges from -1.0 to 1.0. Values close to 1.0 indicate a positive association and values close to -1.0 indicate a negative one (29:373). The MEASURES option added to the TABLES option computes Kendall's tau in SAS (29:376).

PROC NPARIWAY. The Wilcoxon Rank Sum test, also known as the Mann-Whitney U test (29:196), was used to compare the means of two groups. This test is the suggested alternative to the most powerful test of location, the randomization test, for ordinal scale data (30:157). SAS performs this test through the WILCOXON option to the PROC NPARIWAY statement (29:196,221).

PROC STEPWISE. If a relationship between smoke breaks and selected variables was discovered, stepwise regression was performed to determine the optimum subset of independent variables in the regression equation (5:156). Its output provides a t value and its associated p-value describing the significance of each independent variable and a  $R^2$  value describing "the proportion of variance . . . explained by the independent variables" (5:152).

#### IV. Analysis

##### Introduction

This chapter is divided into two main parts and provides an analysis of the data produced by the survey questionnaire using SAS software discussed in Chapter III. The first part is an analysis of the demographic data used to describe the sample population attributes of interest to this research. The second part provides an analysis of data to answer research questions posed in Chapter I.

##### Demographic Data.

The following is an analysis of the demographic data yielded by the survey questionnaire. This data describes selected attributes to determine whether or not the sample population accurately represented the population of interest, the extent of the smoking and smoke break issues in Strategic Air Command, smoke break policy in Strategic Air Command, and the average daily smoke break time per smoker. Unless otherwise noted, demographic information was computed using SAS's PROC UNIVARIATE, PROC FREQ with the TABLES option, and PROC CHART with the HBAR option programs described in Chapter III.

Description of the Sample Population. A demographic description of select attributes of the sample population was computed using the data yielded by survey questions 1 through 5.

Survey questions 1, 2, 3, and 5 provided information about age, grade, and smoking status. Table 1 shows the age category distribution of respondents.

TABLE 1  
AGE CATEGORY DISTRIBUTION OF RESPONDENTS

age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
UNDER 25	47	20.3	47	20.3
25-29	58	25.0	105	45.3
30-34	54	23.3	159	68.5
35-39	44	19.0	203	87.5
40-44	25	10.8	228	98.3
45-49	4	1.7	232	100.0

Table 2 compares the distribution of survey respondents by grade with the population of interest reported by the command (3:3-7).

TABLE 2  
POPULATION DISTRIBUTION BY GRADE

Survey Respondents				Strategic Air Command		
Grade	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
AB	2	0.9	0.9	874	1.0	1.0
AIRMAN	6	2.6	3.5	5419	6.2	7.2
A1C	22	9.6	13.2	10488	12.1	19.3
SGT/SRA	37	16.2	29.4	20827	24.0	43.3
SSGT	41	18.0	47.4	17992	20.7	64.0
TSGT	33	14.5	61.8	9129	10.5	74.5
MSGT	21	9.2	71.1	5882	6.8	81.3
SMSGT	4	1.8	72.8	1233	1.4	82.7
CMSGT	4	1.8	74.6	609	0.7	83.4
2LT	3	1.3	75.9	1261	1.5	84.8
1LT	10	4.4	80.3	2563	2.9	87.8
CAPT	25	11.0	91.2	6777	7.8	95.6
MAJ	10	4.4	95.6	2440	2.8	98.4
LTCOL	10	4.4	100.0	1389	1.6	100.0
Totals	228	100.0	100.0	86883	100.0	100.0

Table 3 shows the percentage of smokers by grade in the sample compared to the percentage of smokers by grade in Strategic Air Command (3:3-7).

TABLE 3

## SMOKERS BY GRADE COMPARED TO THE TOTAL POPULATION

Survey Respondents				Strategic Air Command		
Grade	Frequency	Percent	Cumulative Percent	Frequency	Percent	Cumulative Percent
AB	0	0.0	0.0	179	0.2	0.2
AIRMAN	3	1.3	1.3	633	0.7	0.9
ALC	3	1.3	2.6	2405	2.8	3.7
SGT/SRA	11	4.8	7.4	5242	6.0	9.7
SSGT	15	6.6	14.0	5238	6.0	15.8
TSGT	9	3.9	17.9	3169	3.6	19.4
MSGT	8	3.5	21.4	1928	2.2	21.6
SMSGT	1	0.4	21.8	315	0.4	22.0
CMSGT	2	0.9	22.7	157	0.2	22.2
2LT	0	0.0	22.7	40	0.0	22.2
1LT	0	0.0	22.7	124	0.1	22.4
CAPT	1	0.4	23.1	444	0.5	22.9
MAJ	1	0.4	23.5	187	0.2	23.1
LTCOL	<u>1</u>	<u>0.4</u>	<u>23.9</u>	<u>93</u>	<u>0.1</u>	<u>23.2</u>
Totals	55	23.9	23.9	20154	23.2	23.2

Survey question 4 was asked to determine whether or not the respondent could be classified as a manager or a worker. For the purpose of this research, a manager was defined as anyone who supervised people and held a rank greater than or equal to technical sergeant (E-6). Therefore, IF-THEN/ELSE statements (29:96-98) determined from questions 2, 3, and 4 the percentages of managers and workers among respondents. This determination revealed that 39.7 percent of the respondents were managers and 60.3 percent were workers. Table 4 shows the distribution of managers and workers by grade.

To determine data validity, Wilcoxon Rank Sum Tests were conducted to show whether the sample was significantly different from the population at the 5 percent significance level (27:947-951) according to the grade distribution across the population and also by the percentage of

smokers by grade. Resulting p-values of 0.7329 and 0.8191, respectively, led to the conclusion that the sample was not significantly different from the population.

TABLE 4  
DISTRIBUTION OF MANAGERS AND WORKERS BY GRADE

Grade	Managers	Workers
AB	0	2
AIRMAN	0	6
AIC	0	22
SRA	0	37
SGT/SRA	0	41
SSGT	0	4
TSGT	29	3
MSGT	18	0
SMSGT	4	0
CMSGT	4	0
2LT	3	0
1LT	4	6
CAPT	13	12
MAJ	8	2
<u>LTCOL</u>	<u>9</u>	<u>1</u>
Totals	92	136

In addition to providing the above-mentioned information, responses to survey questions 2 through 5 were evaluated by the computer analysis program to delete responses from non-managers to the MANAGERS ONLY questions, and nonsmokers from the SMOKERS ONLY questions.

Extent of the Smoking and Smoke Break Issues. This research describes the extent of the smoking and smoke break issues in terms of the percentages of people directly touched by the issues. This includes the percentage of managers who supervise at least one smoker, the percentage of people who work with at least one smoker, the percentage of people who work with at least one smoker who has taken a smoke break

in the last month, the percentage of people who have taken a smoke break, and the percentage of people who did another person's work while that person was taking a smoke break. The assumption is that direct experience with an issue may produce some type of behavioral, emotional, intellectual and/or psychological affect that may impact the organization. Survey questions 14, 18, 26, 27, and 28 provided the data for this analysis.

Survey question 18, answered only by managers, determined the percentage of managers who supervised at least one smoker. Of the 77 managers who answered this question, 55 (70.5%) reported they supervised at least one smoker. Survey question 26 determined the percentage of people who work with at least one smoker. Of the 231 respondents who answered this question, 183 (79.2%) reported they work with at least one smoker.

Responses from people who did not work with smokers were not considered for questions 27 and 28.

Survey question 27 determined the percentage of people who work with at least one smoker who has taken a smoke break in the last month. Of the 183 respondents who answered this question, 176 (96.2%) reported that at least one of their smoking co-workers had taken a smoke break in the last month. A comparable percentage of smokers reported they had taken a smoke break at work. Survey question 14, answered only by smokers, revealed that 55 (98.2%) of the 56 respondents had taken a smoke break.

Survey question 28 determined that 51 (28.2%) of the 181 respondents who answered the question did a smoker's work while that smoker was taking a smoke break.



Table 5 summarizes the information presented above.

TABLE 5  
EXTENT OF SMOKING AND SMOKE BREAK ISSUE IN SAC

Area of Interest	Percent Affected
PERCENTAGE OF MANAGERS WHO SUPERVISE SMOKERS	70.5
PERCENTAGE OF PEOPLE WHO WORK WITH A SMOKER	79.2
PERCENTAGE OF PEOPLE WHO WORK WITH A SMOKER WHO HAS TAKEN A SMOKE BREAK IN THE LAST MONTH	96.2
PERCENTAGE OF SMOKERS WHO HAVE TAKEN BREAKS	98.2
PERCENTAGE OF PEOPLE WHO DID A SMOKER'S WORK WHILE THE SMOKER WAS TAKING A SMOKE BREAK	28.2

From the information presented above, it appears that the extent of the smoking and smoke break issues are widespread in Strategic Air Command. The majority of managers supervise at least one smoker and the majority of workers work with at least one smoker. Additionally, almost all of these smokers take smoke breaks while at work. Sometimes, while smokers took smoke breaks, their work was done by others.

Smoke Break Policy in Strategic Air Command. This research describes smoke break policy in Strategic Air Command in terms of times breaks were allowed, who initiated the policy, who enforced the policy, and how well the policy was enforced for those organizations that have a smoke break policy. Data came from survey questions 6 through 10.

Question 6 asked whether or not a policy regulating smoke breaks existed in the respondent's organization. Of the 230 respondents who answered this question, 62 (27%) reported existence of a policy regulating smoke breaks in their organization; 120 (52.2%) reported a policy did not exist; 38 (16.5%) reported they did not know whether a policy existed or not; and 10 (4.3%) reported that a policy was not needed

because none of their fellow workers smoked. The 62 respondents who indicated the existence of a policy regulating smoke breaks were asked to answer survey questions 7 through 10 describing the policy. Table 6 shows the results of this question.

TABLE 6  
SMOKE BREAK POLICY PREVALENCE IN SAC

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
POLICY EXISTS	62	27.0	62	27.0
NO POLICY	120	52.2	182	79.1
DO NOT KNOW	38	16.5	220	95.7
NOT APPLICABLE	10	4.3	230	100.0
Frequency Missing = 2				

Question 7 asked for a description of smoke break policy in terms of times breaks were allowed. Of the 61 respondents who answered this question, one (1.6%) reported that nobody was allowed to take smoke breaks; 43 (70.5%) reported smoke breaks were allowed anytime; and 17 (27.9%) reported that smoke breaks were allowed only at certain times. Table 7 shows the results of this question.

TABLE 7  
WHEN SMOKE BREAKS ARE ALLOWED

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NEVER	1	1.6	1	1.6
ANYTIME	43	70.5	44	72.1
CERTAIN TIMES ONLY	17	27.9	61	100.0
Frequency Missing = 171				

Question 8 asked for a description of smoke break policy in terms of who in the organization initiated the policy. Of the 61 respondents who answered this question, 26 (42.6%) reported they did not know; ten (16.4%) reported that the person in charge of their section initiated it; 21 (34.4%) reported that someone in a position higher than the person in charge of their section initiated it; and four (6.6%) reported someone else initiated it. Table 8 shows the results of this question.

TABLE 8  
WHO INITIATED THE POLICY

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
DO NOT KNOW	26	42.6	26	42.6
SECTION CHIEF	10	16.4	36	59.0
SOMEONE HIGHER	21	34.4	57	93.4
SOMEONE ELSE	4	6.6	61	100.0
Frequency Missing = 171				

Question 9 asked for a description of smoke break policy in terms of who in the organization enforced the policy. Of the 60 respondents who answered this question, 14 (23.3%) reported that nobody enforced the policy; nine (15%) reported that the person in charge of their section enforced it; three (5%) reported that someone in a position higher than the person in charge of their section enforced it; 26 (43.3%) reported enforcement was a responsibility shared by everyone; and eight (13.3%) reported they did not know who enforced it. Table 9 shows the results of this question.

TABLE 9  
WHO ENFORCES THE POLICY

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NOBODY	14	23.3	14	23.3
SECTION CHIEF	9	15.0	23	38.3
SOMEONE HIGHER	3	5.0	26	43.3
EVERYONE	26	43.3	52	86.7
DO NOT KNOW	8	13.3	60	100.0

Frequency Missing = 172

Question 10 asked for a description of smoke break policy in terms of how well the policy was enforced. Of the 60 respondents who answered this question, ten (16.7%) reported the policy was strictly enforced; 13 (21.7%) reported it was enforced most of the time; 11 (18.3%) reported it was enforced some of the time; 13 (21.7%) reported it was hardly ever enforced; and 13 (21.7%) reported they did not know. Table 10 shows the results of this question.

TABLE 10  
DEGREE OF POLICY ENFORCEMENT

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
STRICTLY	10	16.7	10	16.7
MOST OF TIME	13	21.7	23	38.3
SOME OF TIME	11	18.3	34	56.7
HARDLY EVER	13	21.7	47	78.3
DO NOT KNOW	13	21.7	60	100.0

Frequency Missing = 172

The information presented above indicates that 27 percent of respondents reported that a policy regulating smoke breaks existed in their organization, although almost 80 percent of the respondents reported working with at least one smoker and all but one smoker who responded reported taking smoke breaks. This may indicate that in most organizations, there is no perceived need to regulate smoke breaks. Most respondents governed by a smoke break policy reported that the policy permitted smokers to take breaks anytime. Therefore, it appears that policies may not regulate the number of smoke breaks smokers take daily. Regarding enforcement, less than half of the respondents reported the policies reported as enforced "strictly" or "most of the time." Enforcement was most often reported as a shared responsibility. More than a third of the respondents reported either that nobody enforced the policy or they did not know who enforced it. Regarding policy initiation, slightly less than 60 percent knew who originated it.

Average Daily Smoke Break Time Per Smoker. This research describes average daily smoke break time per smoker as a function of the number of breaks taken daily multiplied by the average time per smoke break. Consistent with previous research, the average time per smoke break includes the enroute time to the nearest break area and the length of the smoke break itself (25:42-43). The following formula shows how this figure was calculated:

$$SB = N * ((2T) + L)$$

where:

SB = daily smoke break time  
N = number of smoke breaks daily  
T = one way travel time to the smoking area  
L = average length of the smoke break itself

Survey questions 12, 15, and 16, answered only by smokers, provided the data for this analysis.

These survey questions asked smokers to report the time required to travel to the nearest designated smoking area, the average length of each of their smoke breaks (excluding the time required to travel to and from the smoking area), and the number of smoke breaks they take each day. Daily times ranged from 11 to 189 minutes per day. From this data, an average daily smoke break time per smoker of 41.09 minutes per day was calculated. This figure is less than the figure of 49.5 minutes per day reported by smokers in previous research conducted at a United States Air Force hospital (25:43).

The previous research mentioned above questioned the consistency of this self-reported data (25:42-43). Therefore, the average daily smoke break time computed from self-reported data was compared to the average daily smoke break time smokers reported for other smokers. Data for this comparison was provided by survey questions 11 through 13, which asked respondents to report the number of daily smoke breaks taken by coworkers, the time required by smokers to travel to the designated smoking area, and the average length of the smoke breaks of coworkers. Only responses from smokers who worked with other smokers were considered in this analysis. Daily times ranged from 11 to 189 minutes per day. From this data, an average daily smoke break time of 46.02 minutes per day for other smokers was calculated. Table 11 compares smoke break patterns reported by smokers compared to their perceptions of the patterns of other smokers.

TABLE 11

AVERAGE DAILY SMOKE BREAK PATTERNS SMOKERS  
REPORT FOR THEMSELVES AND OTHER SMOKERS

	Number of Breaks	Smoking Time/Break	Travel Time	Total Time
SELF-REPORTED	4.40	6.70 min	1.61 min	41.09 min
REPORTED FOR OTHER SMOKERS	4.84	6.71 min	1.71 min	46.02 min

This figure of 46.02 minutes was compared to the figure calculated from the self-reported data derived from questions 12, 15 and 16 using the Wilcoxon Signed Rank Test in the SAS PROC UNIVARIATE program described in Chapter III to determine if it differs at the 5 percent significance level. The signed rank test statistic of -60 and its associated p-value of 0.0068 indicates that these figures are significantly different, leading to the conclusion that the average daily smoke break time self-reported by smokers is less than the figure they report for other smokers. This could indicate that smokers under report the amount of time they spend taking smoke breaks daily. This research concludes only that smokers report that smokers spend between 41 and 46 minutes per day taking smoke breaks.

#### Research Questions

The following is an analysis of each research question in terms of a discussion of the particular survey questions used to yield the data, how the original data was manipulated to produce new data when required, the specific SAS program options used for the analysis, and the results of statistical tests when used. The research questions will be analyzed in the order they were presented in Chapter I.

Research Question 1. Research question 1 asked, "How do managers currently regulate smoke breaks?" A statistical description in terms of how managers regulated smoke breaks, the time periods they gave to subordinates for smoke breaks, and the number of smoke breaks they allowed daily answered this question. Survey questions 22 through 25, answered only by managers who supervise at least one smoker, provided the data to answer this question. The analysis was computed by the PROC UNIVARIATE, PROC FREQ with the TABLES option, and the PROC CHART with the HBAR option programs described in Chapter III.

Survey question 22 asked managers whether or not they currently had a smoke break policy. Of the 55 managers who responded to this question, 15 (27.3%) reported that they did have a smoke break policy in effect; 37 (67.1%) reported that they did not have one; and three (5.5%) reported that the question was not applicable since someone else implemented the current smoke break policy. The 15 respondents who indicated they currently had a smoke break policy were asked to answer survey questions 23 through 25 regarding the policy's description. Table 12 shows the results of this question.

TABLE 12  
SMOKE BREAK POLICY PREVALENCE REPORTED BY MANAGERS

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
POLICY EXISTS	15	27.3	15	27.3
NO POLICY	37	67.3	52	94.5
NOT APPLICABLE	3	5.5	55	100.0
Frequency Missing = 15				



Survey question 23 asked managers how they regulated smoke breaks. Of the 15 managers who answered this question, none reported that the people they supervised could not take smoke breaks; 12 (80%) reported that they allowed their people to take smoke breaks anytime if there was no work to do; none reported that their people ask permission when they desire to take a smoke break; and three (20%) reported certain time periods were established throughout the day when people could take smoke breaks. Table 13 shows the results of this question.

TABLE 13  
HOW MANAGERS REGULATE SMOKE BREAKS

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NOT ALLOWED	0	0.0	0	0.0
ALLOWED ANYTIME IF NO WORK	12	80.0	12	80.0
PERMISSION ASKED IF NO WORK	0	0.0	12	80.0
CERTAIN TIMES ONLY	3	20.0	15	100.0
Frequency Missing = 55				

Question 24 asked managers to describe the time period they allowed for smoke breaks. Of the 15 managers who answered this question, none reported they did not allow smoke breaks; four (26.7%) reported that they established a fixed time limit for smoke breaks; three (20%) reported that their people could smoke for as long as they wanted when work was caught up; and eight (53.3%) reported that they permitted each individual to decide the time they needed for smoke breaks. Table 14 shows the results of this question.

TABLE 14

## DESCRIPTION OF THE TIME PERIOD MANAGERS ALLOW FOR BREAKS

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NOT ALLOWED	0	0.0	0	0.0
FIXED TIME LIMIT	4	26.7	4	26.7
UNLIMITED TIME LIMIT				
IF NO WORK	3	20.0	7	46.7
EACH PERSON DECIDES	8	53.3	15	100.0
Frequency Missing = 55				

Question 25 asked managers to describe the number of smoke breaks they allowed their people to take daily. Of the 15 managers who responded, none reported allowing no smoke breaks; one (6.7%) reported someone at a higher level determined the number of smoke breaks their people could take; five (33.3%) reported they limit the number of smoke breaks their people take; four (26.7%) reported that their people could take as many breaks as they wanted whenever work was caught up; and five (33.3%) reported that their people decided for themselves how many smoke breaks to take. Table 15 shows the results of this question.

TABLE 15

## DESCRIPTION OF THE NUMBER OF BREAKS MANAGERS ALLOW

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
NONE ALLOWED	0	0.0	0	0.0
SOMEONE HIGHER DECIDES	1	6.7	1	6.7
NUMBER LIMITED	5	33.3	6	40.0
NUMBER UNLIMITED IF				
NO WORK	4	26.7	10	66.7
EACH PERSON DECIDES	5	33.3	15	100.0
Frequency Missing = 55				

From the information presented above, it appears that about one quarter of managers in SAC have a policy regulating smoke breaks, although slightly more than 70 percent of the managers reported supervising at least one smoker. This may indicate that most managers perceive that smoke breaks require no regulation. The percentage of managers who reported having a smoke break policy corresponded to the percent of respondents reporting existence of a policy in their organization (27.3% compared to 27%, respectfully). Of those policies in existence, most allowed smoke breaks anytime if there was no work and over half allowed smokers to decide the length of their breaks. Regarding the number of breaks permitted daily, a third of the managers reported that they limit the number of breaks smokers take daily; almost a third reported smokers can take as many breaks as they want if there was no work to do; and a third allowed smokers to decide the number of their breaks.

Research Question 2. Research question 2 asked, "Do managers know the smoke break patterns of smokers they supervise?" Survey questions 19 through 21 and 12, 15, and 16 provided the data to answer this question. The analysis was computed by the PROC UNIVARIATE program described in Chapter III.

Survey questions 19 through 21 asked managers the number of daily smoke breaks taken by people they supervise, the average length of the smoke breaks (excluding the time required to travel to and from the smoke break area), and the time their people required to travel one way to the nearest designated smoking area. Responses from managers who did not supervise smokers were excluded from analysis. Daily times ranged from a low of seven minutes per day to 147 minutes per day. From this

data, an average smoke break time per smoker of 49.49 minutes per day was calculated.

The calculation of the average daily smoke break time per smoker that was self-reported by smokers was discussed previously in the section, Average Daily Smoke Break Time Per Smoker, pages 49 through 51. From this data, an average daily smoke break time per smoker of 41.09 minutes per day was calculated. Table 16 compares smoke break patterns perceived by managers to those reported by smokers.

TABLE 16

AVERAGE DAILY SMOKE BREAK PATTERNS PERCEIVED BY MANAGERS  
COMPARED TO WHAT SMOKERS REPORT FOR THEMSELVES

	Number of Breaks	Smoking Time/Break	Travel Time	Total Time
REPORTED BY MANAGERS	5.14	7.22 min	1.47 min	49.49 min
REPORTED BY SMOKERS	4.40	6.70 min	1.61 min	41.09 min

To answer the research question, this figure was compared to the figure reported by smokers using the Wilcoxon Signed Rank Test in the SAS PROC UNIVARIATE program described in Chapter III to determine if it differs at the 5 percent significance level. The signed rank test statistic of 3192.50 and its associated p-value of 0.0396 indicates that these figures are significantly different, leading to the conclusion that managers report a significantly higher average daily smoke break time per smoker than smokers report for themselves.

There are several possible explanations for this discrepancy in reporting. First, smokers under report the amount of time they spend smoking daily. Second, the smokers responding to the survey smoke

significantly less than the smokers actually supervised by the managers who responded to the survey. Third, managers do not know the smoke break patterns of the smokers they supervise and perceive smokers spend more time taking smoke breaks daily than they actually do.

Research Question 3. Research question 3 asked, "Do nonsmokers perceive smokers spend more time taking breaks than they actually do?" Survey questions 11, 12, 13, 15, and 16 provided the data to answer this question. Survey questions 11 through 13 asked respondents to report the number of daily breaks taken by co-workers who smoke, the time it takes to travel one way to the nearest smoking area, and the average length of the breaks of the smokers they work with (excluding the time required to travel to and from the smoke break area). Only nonsmokers' responses to these questions were considered for this analysis. Responses from nonsmokers who did not work with smokers were excluded from analysis. Daily times ranged from a low of seven minutes per day to 203 minutes per day. From this data, an average daily smoke break time per smoker of 57.41 minutes per day was calculated.

The calculation of the average daily smoke break time per smoker that was self-reported by smokers was discussed previously in the section, Average Daily Smoke Break Time Per Smoker, pages 49 through 51. From this data, an average daily smoke break time per smoker of 41.09 minutes per day was calculated. Table 17 compares smoke break patterns perceived by nonsmokers compared with those reported by smokers.

To answer the research question, this figure was compared to the figure reported by smokers using the Wilcoxon Signed Rank Test in the SAS PROC UNIVARIATE program described in Chapter III to determine if it

TABLE 17

AVERAGE DAILY SMOKE BREAK PATTERNS PERCEIVED BY NONSMOKERS  
COMPARED TO WHAT SMOKERS REPORT FOR THEMSELVES

	Number of Breaks	Smoking Time/Break	Travel Time	Total Time
REPORTED BY NONSMOKERS	5.48	7.52 min	1.46 min	57.41 min
REPORTED BY SMOKERS	4.40	6.70 min	1.61 min	41.09 min

differs at the 5 percent significance level. The signed rank test statistic of 3520.00 and its associated p-value of 0.0003 indicates that these figures are significantly different, leading to the conclusion that nonsmokers perceive smokers spend more time taking smoke breaks daily than smokers report they actually do.

There are several possible explanations for this discrepancy in figures. First, smokers under report the amount of time they spend smoking daily. Second, the smokers surveyed smoke significantly less than the nonsmokers' co-workers. Third, nonsmokers perceive smokers spend more time taking smoke breaks daily than they actually do.

Research Question 4. Research question 4 asked, "Does networking occur during smoke breaks?" A statistical description in terms of the frequency that smokers heard about new organizational information and the frequency that smokers talk about work at the designated smoke break area answered this question. Survey questions 30 and 31, answered only by smokers, provided the data to answer this question. The analysis was computed using the PROC FREQ with TABLES option and PROC CHART with HBAR option programs described in Chapter III.

Survey question 30 asked smokers when they last heard about a new policy or personnel change in their organization while on a smoke break.

Of the 55 smokers answering this question, 13 (23.6%) reported that the last time was today, 20 (36.4%) reported it was this week, six (10.9%) reported it was last week, four (7.3%) reported it was last month, two (3.6%) reported it was before last month, and ten (18.2%) reported it never happened. Table 18 shows the results of this question.

TABLE 18

SMOKERS' RESPONSE DESCRIBING THE LAST TIME THEY HEARD ABOUT  
A NEW POLICY OR PERSONNEL CHANGE IN THEIR ORGANIZATION

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
TODAY	13	23.6	13	23.6
THIS WEEK	20	36.4	33	60.0
LAST WEEK	6	10.9	39	70.9
LAST MONTH	4	7.3	43	78.2
BEFORE LAST MONTH	2	3.6	45	81.8
NEVER	10	18.2	55	100.0

Frequency Missing = 2

Survey question 31 asked smokers how often people they smoke with at the designated smoking area talk about work. Of the 56 smokers answering this question, 47 (83.9%) reported that talk occurred daily, four (7.1%) reported it occurred 3-4 times per week, three (5.4%) reported it occurred 1-2 times per week, and two (3.6%) reported it never occurred. Table 19 shows the results of this question.

The data presented above indicates that networking occurs during smoke breaks. Almost all smokers reported talking about work with their fellow smokers at the designated smoking area at least several times per week. Most reported talking about work daily while smoking. While talking about work, 60 percent of the smokers reported talking about new

policies or personnel changes within the last week. However, 18.2 percent reported never talking about new policies or personnel changes while smoking. It is possible that some of these people work in organizations in which policy or personnel change is rare, or that they are new to the organization and have yet to witness a policy or personnel change.

TABLE 19

SMOKERS' RESPONSE DESCRIBING THE FREQUENCY THAT PEOPLE THEY SMOKE WITH AT THE DESIGNATED SMOKING AREA TALK ABOUT WORK

Response	Frequency	Percent	Cumulative Frequency	Cumulative Percent
DAILY	47	83.9	47	83.9
3-4 TIMES/WEEK	4	7.1	51	91.1
1-2 TIMES/WEEK	3	5.4	54	96.4
NEVER	2	3.6	56	100.0
Frequency Missing = 1				

Research Questions 5 through 11. Research questions 5 through 11 asked about the relationship between the average daily smoke break time per smoker and selected variables. These variables include intergroup conflict and perceived equity between smokers and nonsmokers, perceived productivity of smokers, job satisfaction, smoker networking, organizational commitment, the perception that smoke breaks encourage smoking, and organizational climate. This research treated the average daily smoke break time per smoker as an independent variable and the selected variables as dependent.

To determine the existence of the relationship between the dependent and independent variables, Chi-square tests were computed



using FREQ program with the TABLES and CHISQ options discussed in Chapter III. Appendix C contains the Chi-square tables used in this analysis. When Chi-square tests indicated that a dependent relationship existed between the variables, Kendall's tau was calculated to determine the nature of the relationship. Responses from nonsmokers who did not work with smokers were not considered for analysis.

Survey questions 11, 12, 13, 15 and 16 provided the data for the calculation of the average daily smoke break time per smoker. Because of the significant difference between the average daily smoke break time smokers reported for themselves compared to the time they reported for other smokers, the average daily smoke break times they reported for themselves was used in this analysis. For nonsmokers, the average daily smoke break time they reported for other smokers was used. Responses from nonsmokers who did not work with smokers were not considered for analysis. For the Chi-square tests conducted for nonsmokers, the average daily smoke break time per smoker was grouped by SAS as either less than or equal to 30 minutes per day, greater than 30 minutes per day but less than or equal to 60 minutes per day, or greater than 60 minutes per day. For the Chi-square tests conducted for smokers, the average daily smoke break time per smoker was grouped by SAS as either less than or equal to 25 minutes per day, greater than 25 minutes per day but less than or equal to 50 minutes per day, or greater than 50 minutes per day. The smaller sample size of smokers required grouping average daily smoke break times into smaller blocks compared to the blocks constructed for nonsmokers to ensure that cross tabulation cells contained at least five responses each.

Prior to conducting the Chi-square tests and calculating Kendall's Tau, the dependent variables were analyzed using the PROC UNIVARIATE procedure described in Chapter III to determine their averages after separating smokers and nonsmokers into separate groups. For the Chi-square tests, the dependent variables were grouped by SAS as either less than or equal to, or greater than, these averages. Responses from nonsmokers who did not work with smokers who had taken smoke breaks were excluded from analysis. The analysis revealed that the means of the dependent variables calculated from smokers' responses differed from those calculated from nonsmokers' responses. No analysis was conducted to determine if the differences in means were statistically significant. Table 20 summarizes the means reported by smokers and nonsmokers for each dependent variable.

TABLE 20

DEPENDENT VARIABLE MEANS REPORTED BY SMOKERS  
COMPARED TO THOSE REPORTED BY NONSMOKERS

	Intergroup Conflict and Inequity	Smoker Productivity	Job Satisfaction	Smoker Networking
SMOKERS	2.61	4.10	2.92	4.58
NONSMOKERS	3.09	3.00	3.02	3.36
	Organizational Commitment	Encouragement to Smoke	Organizational Climate	
SMOKERS	5.37	2.34	4.98	
NONSMOKERS	5.13	3.46	4.95	

The PROC UNIVARIATE outputs that show the means for each of these dependent variables calculated from responses provided by nonsmokers and smokers are contained in Appendix D.

Research Question 5. Research question 5 asked, "What is the relationship between the average daily smoke break time per smoker and intergroup conflict and perceived inequity between smokers and nonsmokers?" Survey questions 36, 44, 48, 50, and 52 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table crosstabulated average daily smoke break time per smoker with the grand mean of intergroup conflict and perceived inequity reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 5.991 and 0.050. These results indicate that for nonsmokers, the average daily smoke break time per smoker and intergroup conflict and perceived inequity between smokers and nonsmokers are statistically dependent at the 0.050 level. A computed Kendall's tau value of 0.191 indicates that nonsmokers perceived a slightly positive relationship between average daily smoke break time per smoker and intergroup conflict and inequity between smokers and nonsmokers.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 1.924 and 0.382. These results indicate that for smokers, the average daily smoke break time per smoker and intergroup conflict and perceived inequity between smokers and nonsmokers are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that nonsmokers perceived a slightly positive relationship between average daily smoke break time per smoker and intergroup conflict and perceived inequity between smokers and nonsmokers. As average daily smoke break time increased, nonsmokers perceived that intergroup conflict and

inequity between smokers and nonsmokers increased. Conversely, as average daily smoke break time per smoker decreased, nonsmokers perceived that intergroup conflict and inequity between smokers and nonsmokers decreased. For smokers, the relationship between average daily smoke break time per smoker and intergroup conflict and perceived inequity is statistically independent at the 0.050 level.

Contingency Tables 1 and 2, Appendix C, show the crosstabulation of average daily smoke break time per smoker with intergroup conflict and perceived inequity between smokers and nonsmokers, for nonsmokers and smokers, respectively.

Research Question 6. Research question 6 asked, "What is the relationship between the average daily smoke break time per smoker and perceived productivity of smokers?" Survey questions 29, 38, 43, and 45 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table crosstabulated average daily smoke break time per smoker with the grand mean of perceived productivity of smokers reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 12.288 and 0.002. These results indicate that for nonsmokers, the average daily smoke break time per smoker and perceived productivity of smokers are statistically dependent at the 0.050 level. A computed Kendall's tau value of -0.288 indicates that nonsmokers perceived a slight negative relationship between average daily smoke break time per smoker and smoker productivity.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 4.062 and 0.131. These results indicate that

for smokers, the average daily smoke break time per smoker and perceived productivity of smokers are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that nonsmokers perceived a slight negative relationship between average daily smoke break time per smoker and productivity. As average daily smoke break time increased, nonsmokers perceived that productivity decreased. Conversely, as average daily smoke break time per smoker decreased, nonsmokers perceived that productivity increased. For smokers, the relationship between average daily smoke break time per smoker and smoker productivity is statistically independent at the 0.050 level. Contingency Tables 3 and 4, Appendix C, show the crosstabulation of average daily smoke break time per smoker with productivity of smokers for nonsmokers and smokers, respectively.

Research Question 7. Research question 7 asked, "What is the relationship between the average daily smoke break time per smoker and job satisfaction?" Survey questions 32, 33, and 34 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table crosstabulated average daily smoke break time per smoker with the grand mean of job satisfaction reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 0.572 and 0.751. These results indicate that for nonsmokers, the average daily smoke break time per smoker and job satisfaction are not statistically dependent at the 0.050 level.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 2.280 and 0.244. These results indicate that for smokers, the average daily smoke break time per smoker and job satisfaction are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that average daily smoke break time per smoker and job satisfaction reported by nonsmokers and smokers are statistically independent at the 0.050 level. Contingency Tables 5 and 6, Appendix C, show the crosstabulation of average daily smoke break time per smoker and job satisfaction for nonsmokers and smokers, respectively.

Research Question 8. Research question 8 asked, "What is the relationship between the average daily smoke break time per smoker and smoker networking?" Survey questions 37, 41, and 51 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table crosstabulated average daily smoke break time per smoker with the grand mean of smoker networking reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 0.145 and 0.930. These results indicate that for nonsmokers, the average daily smoke break time per smoker and smoker networking are not statistically dependent at the 0.050 level.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 2.037 and 0.361. These results indicate that for smokers, the average daily smoke break time per smoker and smoker networking are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that average daily smoke break time per smoker and smoker networking reported by nonsmokers and smokers are statistically independent at the 0.050 level. Contingency Tables 7 and 8, Appendix C, show the crosstabulation of average daily smoke break time per smoker with smoker networking for nonsmokers and smokers, respectively.

Research Question 9. Research question 9 asked, "What is the relationship between the average daily smoke break time per smoker and organizational commitment?" Survey questions 35, 40, and 46 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table crosstabulated average daily smoke break time per smoker with the grand mean of organizational commitment reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 0.750 and 0.687. These results indicate that for nonsmokers, the average daily smoke break time per smoker and organizational commitment are not statistically dependent at the 0.050 level.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 4.614 and 0.100. These results indicate that for smokers, the average daily smoke break time per smoker and organizational commitment are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that average daily smoke break time per smoker and organizational commitment reported by nonsmokers and smokers are statistically independent at the 0.050 level. Contingency Tables 9 and 10, Appendix C, show the cross-tabula-

tion of average daily smoke break time per smoker with organizational commitment for nonsmokers and smokers, respectively.

Research Question 10. Research question 10 asked, "What is the relationship between the average daily smoke break time per smoker and the perception that smoke breaks encourage smoking?" Survey questions 47, 49, and 54 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table cross-tabulated average daily smoke break time per smoker with the grand mean of questions asking respondents if smoke breaks encouraged people to smoke reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 1.046 and 0.593. These results indicate that for nonsmokers, the average daily smoke break time per smoker and perception that smoke breaks encourage smoking are not statistically dependent at the 0.050 level.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 5.869 and 0.053. These results indicate that for smokers, the average daily smoke break time per smoker and perception that smoke breaks encourage smoking are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that average daily smoke break time per smoker and perceptions that smoke breaks encourage smoking are statistically independent at the 0.050 level. Therefore, since no relationship seems to exist between average daily smoke break time per smoker and the perception that smoke breaks encourage smoking, this research concludes that the relationship between



average daily smoke break time per smoker and SAC's initiative to eliminate smoking is statistically independent. Contingency Tables 11 and 12, Appendix C, show the crosstabulation of average daily smoke break time per smoker with perceptions of smoke breaks to encourage smoking for nonsmokers and smokers, respectively.

Research Question 11. Research question 11 asked, "What is the relationship between the average daily smoke break time per smoker and organizational climate?" Survey questions 39, 42, and 53 provided the data to answer this question. From this data, the SAS computer program calculated a grand mean for each respondent, creating a new variable. A contingency table crosstabulated average daily smoke break time per smoker with the grand mean of organizational climate reported by nonsmokers and smokers.

The Chi-square test statistic and its associated p-value calculated by SAS for nonsmokers were 0.352 and 0.839. These results indicate that for nonsmokers, the average daily smoke break time per smoker and organizational climate are not statistically dependent at the 0.050 level.

The Chi-square test statistic and its associated p-value calculated by SAS for smokers were 0.730 and 0.393. These results indicate that for smokers, the average daily smoke break time per smoker and organizational climate are not statistically dependent at the 0.050 level.

The information presented above led to the conclusion that average daily smoke break time per smoker and organizational climate reported by nonsmokers and smokers are statistically independent at the 0.050 level. Contingency Tables 13 and 14, Appendix C, show the crosstabulation of

average daily smoke break time per smoker with organizational climate for nonsmokers and smokers, respectively.

Research Question 12. Research question 12 asked, "If there is a relationship between the average daily smoke break time per smoker and (a) intergroup conflict and perceived inequity between smokers and nonsmokers, (b) perceived productivity of smokers, (c) job satisfaction, (d) smoker networking, (e) organizational commitment, (f) Strategic Air Command's initiative to eliminate smoking and/or (g) organizational climate, which variables that determine average daily smoke break time per smoker are statistically significant? These variables include the number of smoke breaks smokers take daily, the time required to travel one way to the designated smoking area, and the time taken for each smoke break, excluding the travel time.

Research questions 5 through 11 indicated a relationship exists between the average daily smoke break time per smoker and (1) intergroup conflict and inequity perceived by nonsmokers and (2) smoker productivity perceived by nonsmokers. Therefore, stepwise regression analysis using the SAS PROC STEPWISE program discussed in Chapter III was conducted for each of the dependent variables listed above to determine which variables are most significant.

Intergroup Conflict and Perceived Inequity. For the dependent variable "Intergroup Conflict and Perceived Inequity," the SAS stepwise procedure indicated the number of smoke breaks smokers take daily and the amount of total time spent smoking (excluding the time to travel to and from the designated smoking areas) as significant independent variables with p-values of 0.0477 and 0.1108, respectively. Total time spent traveling to and from the designated smoke break area was not

considered significant. This may be explained by the relatively small amount of time that nonsmokers reported was required to travel to the designated smoke break area. This information seems to suggest that management of smoke breaks should concentrate on the number of daily smoke breaks and the amount of total time spent actually smoking if reduction of intergroup conflict and inequity perceived by nonsmokers is desired. However, this does not suggest that managing these variables will reduce intergroup conflict and inequity perceived by nonsmokers. An R-square value produced by the stepwise regression procedure of 0.07835912 suggests that there is considerable variance in nonsmokers' perceptions of intergroup conflict and perceived inequity for which these variables do not account. Therefore, this research concludes that manipulating these variables alone to control nonsmokers' perceptions of intergroup conflict and inequity between smokers and nonsmokers would not be productive. The unaccounted for variance in nonsmokers' perceptions strongly suggests there are other relevant factors related to average daily smoke break time per smoker and these perceptions of conflict and inequity which need to be identified.

Perceived Productivity. For the dependent variable "Perceived Productivity," the SAS stepwise procedure indicated the amount of total time spent smoking (excluding the time to travel to and from the designated smoking areas) and number of smoke breaks smokers take daily as significant independent variables with p-values of 0.0001 and 0.0202, respectively. Total time spent traveling to and from the designated smoke break area was not considered significant. This may be explained by the relatively small amount of time that nonsmokers reported was required to travel to the designated smoke break area. This information

seems to suggest that management of smoke breaks should concentrate on the amount of total time spent actually smoking and the number of daily smoke breaks if an increase in smoker productivity, as perceived by nonsmokers, is desired. However, this does not suggest that managing these variables will increase smoker productivity as perceived by nonsmokers. An R-square value produced by the stepwise regression procedure of 0.16527122 suggests that there is considerable variance in nonsmokers' perceptions of smoker productivity for which these variables do not account. Therefore, this research concludes that manipulating these variables alone to control nonsmokers' perceptions of smoker productivity would not be productive. The unaccounted for variance in nonsmokers' perceptions strongly suggests there are other relevant factors related to average daily smoke break time per smoker and these perceptions of smoker productivity which need to be identified.

### Conclusion

This chapter provided an analysis of the data produced by the survey questionnaire.

First, an analysis of the demographic data confirmed that the sample represented the population of interest according to the parameters of distribution of respondents by grade and distribution of responding smokers by grade.

Second, the extent of the smoking and smoke break issue in Strategic Air Command was evaluated. The evaluation revealed that more than 70 percent of managers supervised at least one smoker, almost 80 percent of people worked with at least one smoker, almost all smokers

took smoke breaks while at work, and more than 25 percent of people had done a smokers work while that smoker was taking a smoke break.

Third, the smoke break policy in Strategic Air Command was described. Twenty-seven percent of respondents reported that a policy existed in their organization. Most of these policies were described as allowing smoke breaks anytime. Less than half the policies were reported as enforced "strictly" or "most of the time." Over 40 percent of the respondents characterized policy enforcement as a shared responsibility.

Fourth, the average daily time smokers spent taking smoke breaks was calculated from data provided by smokers. This time amounted to an average of 41.09 minutes per day per smoker. This figure was compared to the amount of time smokers reported that other smokers spent taking smoke breaks. On the average, smokers reported they spent almost 5 fewer minutes per day taking smoke breaks than coworkers who smoked. This difference was significantly different at the 5 percent significance level.

Fifth, manager responses were analyzed to describe how they regulated smoke breaks. Slightly more than 27 percent of the managers reported they had a smoke break policy in existence. Of these policies, 20 percent permitted smoking only during certain times, 26.2 percent limited a time limit for smoking, and 33.3 percent limited the number of smoke breaks daily.

Sixth, data provided by managers was used to calculate the average total time per day smokers spent taking smoke breaks. A figure of 49.49 minutes per day was calculated and compared to the figure calculated from smokers' data to describe their average daily smoke break time. A statistically significant difference was found between the figures

reported by managers and smokers. This may indicate that the smokers working for the managers responding to the survey smoked significantly more than the smokers who responded to the survey, or that managers do not know the smoke break patterns of their subordinates.

Seventh, data provided by nonsmokers was used to calculate the average daily time they thought smokers spent taking breaks. A figure of 57.41 minutes per day was calculated. This figure differed significantly from the figure calculated from smokers' data to describe their average daily smoke break time. This may indicate that nonsmokers perceive smokers spend more time taking smoke breaks daily than they actually do.

Eighth, the data was analyzed to determine whether or not smoker networking occurred. Only responses provided by smokers was considered in this analysis. Over 80 percent of smokers reported hearing about new policies or personnel changes in their organization while on break, and over 96 percent reported that people they smoke with talk about work at least weekly. This information led to the conclusion that smoker networking occurs during smoke breaks.

Ninth, the relationships between average daily smoke break time per smoker and (1) intergroup conflict and perceived inequity, (2) perceived smoker productivity, (3) job satisfaction, (4) smoker networking, (5) organizational commitment, (6) encouragement to smoke, and (7) organizational climate were examined. The relationships between average daily smoke break time per smoker and (1) intergroup conflict and inequity perceived by nonsmokers and (2) smoker productivity perceived by nonsmokers were determined to be statistically dependent at the 0.05 significance level. Kendall tau values indicated that as average daily

smoke break time per smoker increased, intergroup conflict and inequity perceived by nonsmokers increased and smoker productivity perceived by nonsmokers decreased.

Last, stepwise regression performed on the variables that determined average daily smoke break time per smoker for the dependent variables "intergroup conflict and inequity" and "smoker productivity" perceived by nonsmokers revealed that the number of smoke breaks taken daily and the total time smokers spent smoking (excluding the time required to travel to the designated smoking area) was statistically significant. However, these factors failed to account for a significant amount of variance. Therefore, managers should not expect to manipulate nonsmokers' perceptions regarding intergroup conflict and inequity, and smoker productivity, solely by managing the number and length of smokers' breaks.

## V. Conclusions and Recommendations

### Conclusions

This section summarizes the conclusions reached in this research relative to the specific objectives presented in Chapter I.

Current Smoke Break Management. The extent of the smoking and smoke break issue in Strategic Air Command is widespread relative to the number of people these issues touch. Almost all smokers in the command take smoke breaks at work. However, just 27 percent of the respondents reported their organization had a smoke break policy and most indicated these policies were lenient in terms of enforcement and rules regarding specific times when breaks were permitted and break length.

Affect of Smoke Breaks on the Organization. According to smokers, the cumulative time spent taking breaks averages between 41 and 46 minutes and ranges between 11 to 189 minutes per day. However, managers and nonsmoking coworkers perceive smokers spend significantly more time taking smoke breaks than smokers report. Managers report that smokers spent up to 147 minutes per day smoking, and nonsmoking coworkers report a figure of 203 minutes per day. While it is difficult to determine how much time smokers actually spend taking smoke breaks per day, it is fair to assume that the actual figure falls between that reported by smokers and that reported by nonsmoking coworkers.

Regardless of the actual figure, nonsmokers perceive that as the cumulative time smokers spend taking smoke breaks increases, intergroup conflict and inequity between them and smokers increases, and the productivity of smokers decreases. The affect that these perceptions have on the organization may differ significantly.



Because intergroup conflict and inequity is a personal perception, it exists. Because it exists, it is possible that nonsmokers may attempt to reduce it by quitting, or increasing their absenteeism and/or decreasing their work output (9:100-101). These courses of action negatively affect the organization.

Whereas the perception of intergroup conflict and inequity equates to existence, the perception of productivity does not necessarily equate to actual productivity. Therefore, actual productivity may not decrease as average daily smoke break time per smoker increases. If the productivity is perceived, then the organization must have excess capacity. Impending force reductions may reduce this capacity, resulting in an actual, rather than perceived, loss of productivity. If the loss in productivity is actual, then the organization is negatively affected.

Feasibility of Manipulating Independent Variables. The number of smoke breaks smokers take daily and their duration (excluding the time required to travel to and from the designated smoking area) are significant relative to nonsmokers' perceptions of intergroup conflict and inequity, and smoker productivity. This does not mean that managers can solely manage the number and duration of smoke breaks to manipulate these perceptions with certain outcome. There are other unknown variables which may account for a large portion of the variance in nonsmokers' perceptions that should be identified before purposeful manipulation can occur.

#### Recommendations

This section provides specific recommendations based on the analysis discussed in Chapter IV.

Smoker Networking. This research concluded that smoker networking exists in Strategic Air Command. Managers should take advantage of this informal communication channel to disseminate important organizational information. Managers who do not smoke should entrust this task to responsible smokers in the organization. Managers who do smoke should spread this information themselves. By enhancing communication in the organization, the effectiveness of the organization can be increased.

Provide Extra Capacity. Twenty-seven percent of respondents reported doing a smoker's work while that smoker was taking a smoke break. While this does not indicate an actual loss of productivity from an organizational point of view, it does indicate another person with excess capacity accomplished the work. However, it is reasonable to assume that when a smoker is on break and no one else is available to perform a smoker's work, the work is either performed late, or not at all. If an organization's output is sequence dependent, then late tasks upstream can result in late organizational output and failure to accomplish an upstream task may result in no output at all. Therefore, managers should ensure that excess capacity exists prior to permitting smokers to take smoke breaks. This argument alone may justify the need for a smoke break management policy. At the very least, when the organization's output is sequence dependent, a smoke break policy of "Do not take smoke breaks unless others are available to do your work" should be adopted.

Reduce Perceived Intergroup Conflict and Inequity. Managers may be able to reduce nonsmokers' perceived intergroup conflict and inequity simply by providing them with breaks equal in number and kind received by smokers. Designated "nonsmoking" areas could be set aside so that

nonsmokers could break in a smoke-free area. The assumption is that if smoke breaks are permitted, the organization has excess capacity. This excess capacity should be shared by smokers and nonsmokers.

Determine Productivity Loss. Research should be conducted to determine if the smoker productivity loss reported by nonsmokers is perceived or actual. In reality, some of the productivity loss is probably actual, while some is perceived. If the productivity loss is actual, then a cost associated with it should be fixed. If the productivity is perceptual, then measures on how to reduce it should be examined and proposed.

Prior to determining whether or not the productivity loss is actual or perceived, the actual time that smokers spend taking smoke breaks must be determined. The differences in average daily smoke break time reported by smokers and nonsmokers suggests that direct observation is required to determine the true figure with certainty.

Account for Unexplained Variance. The number and duration of smoke breaks failed to account for much of the variance in nonsmokers' perceptions regarding intergroup conflict and inequity, and productivity of smokers relative to the time smokers spent taking smoke breaks daily. Further research could identify the variables that account for this unexplained variance so that a useful model could be formulated for the purposeful management of smoke breaks.

Appendix A: Survey Questionnaire

USAF Survey Control Number 91-28  
Expiration Date 1 August 1991

STRATEGIC AIR COMMAND SURVEY ON SMOKE BREAKS



DEPARTMENT OF THE AIR FORCE  
AIR UNIVERSITY  
AIR FORCE INSTITUTE OF TECHNOLOGY  
WRIGHT-PATTERSON AIR FORCE BASE OH 45433-8583

REPLY TO  
ATTN OF LSR

SUBJECT: Smoke Break Survey

TO:

1. Please take time to complete the attached questionnaire and return it in the enclosed envelope NLT three days after receipt of this letter.
2. The survey asks about the smoke break policy in your organization and measures your perceptions and attitudes toward how smoke breaks impact your organization. The data will be used as part of an Air Force Institute of Technology research project. Your individual responses will be combined with others and will not be attributed to you personally.
3. Your participation is completely voluntary, but we would certainly appreciate your help. For further information, contact me at DSN 785-2254 or Capt Hinkin at DSN 785-8989.

*John T. Huguley, Jr.*

JOHN T. HUGULEY, JR., Lt Col, USAF  
Assistant Professor of Communication  
and Research Methods  
Department of Communication and Organizational  
Sciences

- 2 ATCH  
1. Questionnaire  
2. Return Envelope

## PRIVACY ACT

In accordance with paragraph 30, AFR 12-35, the following information is provided by the Privacy Act of 1974:

a. Authority:

- (1) 5 U.S.C. 301, Departmental Regulations; and/or
- (2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or
- \*(3) EO 9397, 22 Nov 43, Numbering System for Federal Accounts Relating to Individual Persons; and/or
- (4) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or
- (5) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal Purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solution of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

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NOTE: \*EO 9397 will be cited as an authority only if personnel identification information (Name and/or Social Security Account Number) is requested from the respondent.

## GENERAL INFORMATION

The purpose of this questionnaire is to obtain information about you, your job, your work group, and your organization. Specifically, this information is being collected in support of research assessing how smoke breaks impact Strategic Air Command in the areas of intergroup conflict, personnel productivity, job satisfaction, smoker networking, organizational commitment, and the initiative to eliminate smoking.

Please be assured that all information you provide will be held in the strictest confidence. Your individual responses will NOT be provided to management or any other agency. Individual responses will be combined with others and will not be attributed to any individual respondent. Feedback on the study's results will be presented to the Health Promotion Program Manager, Office of the Surgeon, Strategic Air Command, only in terms of group averages. Additionally, when the results of this study are published, readers will NOT be able to identify specific individuals, work groups, or organizations.

Participation in this survey is entirely voluntary. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

Thank you for your cooperation in participation in this study.

## KEYWORDS

The following are definitions of key words that recur throughout the questionnaire:

1. Smoker: One who regularly smokes cigarettes, pipes, or cigars.
2. Manager: For this survey's purposes, a manager is someone who:
  - (1) is an E-6 or above and
  - (2) supervises people and
  - (3) can establish policies at work.
3. Organization: The place in which you work.
4. Smoke Break: A break from work for the purpose of smoking.

## INSTRUCTIONS

This questionnaire contains 57 questions. The questionnaire booklet is broken into four parts. Part I contains five questions regarding background information about you. Part II contains 20 questions regarding the smoke break policy in your organization (if one exists). Part III contains six general questions regarding smoking and smoke breaks in your organization. Last, Part IV contains 23 questions regarding how you feel smoke breaks impact your organization. All items must be answered by filling in the appropriate spaces on the machine-scored response sheets provided. If for any item you do not find a response that answers the question exactly, use the one that is the closest to the way you feel.

Please use a "soft-lead" (No. 2) pencil, and observe the following:

1. Make heavy black marks that fill in the space (of the response you select).
2. Erase cleanly any responses you wish to change.
3. Make no stray markings of any kind on the response sheet.
4. Do not staple, fold, or tear the response sheet.

You have been provided with an answer sheet. Do NOT fill in your name on it so that your responses will be anonymous.

Each response block has ten spaces (numbered 1 through 10). Most of the questions have fewer than ten responses. Respond to the questions by marking the appropriate space on the answer sheet as in the following example:

### SCALE

- |                                |                      |
|--------------------------------|----------------------|
| 1 = Strongly disagree          | 5 = Slightly agree   |
| 2 = Moderately disagree        | 6 = Moderately agree |
| 3 = Slightly disagree          | 7 = Strongly agree   |
| 4 = Neither agree nor disagree |                      |



Sample question # 1:

Often I find it difficult to agree with this organization's policies on important matters relating to its employees.

(If you "moderately agree" with the sample question, you would "blacken in" the corresponding number of that statement (moderately agree = 6) on the answer sheet for question number 1.

Sample responses: 1 2 3 4 5 6 7 8 9 10

[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

After completing the survey, place the answer sheet in the envelope provided and mail it. Please complete and return the survey within three days of receiving it. Your timely response is crucial to this research.

PART 1

BACKGROUND INFORMATION

This section of the survey contains questions dealing with personal characteristics. Responses will be used to portray the "typical employee."

1. What is your age?

- (1) under 25
- (2) 25-29
- (3) 30-34
- (4) 35-39
- (5) 40-44
- (6) 45-49
- (7) 50 and over

2. For enlisted personnel, what is your grade?

- (1) E-1
- (2) E-2
- (3) E-3
- (4) E-4
- (5) E-5
- (6) E-6
- (7) E-7
- (8) E-8
- (9) E-9
- (10) Not applicable (i.e., commissioned officer)

3. For commissioned officers, what is your grade?

- (1) O-1
- (2) O-2
- (3) O-3
- (4) O-4
- (5) O-5
- (6) Not applicable (i.e., enlisted)

4. Do you directly supervise other people?

- (1) No
- (2) Yes, 1-5 people
- (3) Yes, 6-10 people
- (4) Yes, 11-25 people
- (5) Yes, 26-50 people
- (6) Yes, 51-100 people
- (7) Yes, more than 100 people

5. What is your current smoking status?

- (1) I do not smoke
- (2) I do smoke (e.g., cigarettes, pipe, cigars)

PART II

QUESTIONS REGARDING SMOKE BREAK POLICY

PART IIA

SMOKERS AND NONSMOKERS

This section of the survey applies to everyone and contains questions regarding the smoke-break policy in your organization.

6. Does your organization have a policy that regulates smoke breaks?

- (1) Yes
- (2) No
- (3) Don't know
- (4) Not applicable (nobody I work with smokes)

If you checked 2, 3, or 4, skip to question 11.

7. Which of the following statements best describes the smoke break policy where you work:

- (1) Nobody is allowed to take a smoke break.
- (2) Smoke breaks are allowed anytime.
- (3) Smoke breaks are allowed only at certain times.

8. Who in your organization initiated the policy?

- (1) Don't know
- (2) The officer or noncommissioned officer-in-charge of the section in which I work.
- (3) Someone in a higher position than the officer or noncommissioned officer-in-charge of the section in which I work.
- (4) Someone else

9. Who in your organization enforces the policy?

- (1) Nobody
- (2) The officer or noncommissioned officer-in-charge of the section in which I work.
- (3) Someone in a higher position than the officer or noncommissioned officer-in-charge of the section in which I work.
- (4) Everyone shares the responsibility to enforce it.
- (5) Don't know

10. How well enforced is the smoke break policy?

- (1) Strictly enforced
- (2) Enforced most of the time
- (3) Enforced some of the time
- (4) Hardly ever enforced
- (5) Don't know

11. On the average, how many breaks do smokers in your office take each day to smoke?

- (1) 1
- (2) 2
- (3) 3
- (4) 4
- (5) 5
- (6) 6
- (7) 7
- (8) 8
- (9) More than 8
- (10) Not applicable

12. How long does it take to get to the nearest smoking area from your work area?

- (1) Less than 2 minutes
- (2) More than 2 minutes but less than 4 minutes
- (3) More than 4 minutes but less than 6 minutes
- (4) More than 6 minutes but less than 8 minutes
- (5) More than 8 minutes but less than 10 minutes
- (6) More than 10 minutes
- (7) Don't know
- (8) Not applicable (no one smokes at work)

13. On the average, how long are the smoke breaks of smokers in your office (not including getting to and from the smoking area)?

- (1) Less than 2 minutes
- (2) More than 2 minutes but less than 4 minutes
- (3) More than 4 minutes but less than 6 minutes
- (4) More than 6 minutes but less than 8 minutes
- (5) More than 8 minutes but less than 10 minutes
- (6) More than 10 minutes but less than 12 minutes
- (7) More than 12 minutes but less than 14 minutes
- (8) More than 14 minutes
- (9) Don't know
- (10) Not applicable (no one smokes at work)

If you are a smoker, please continue to PART IIB on page 4.

If you are a nonsmoker who is:

- (1) a manager then go to PART IIC on page 5.
- (2) not a manager then go to PART IIIA on page 8.

PART IIB

SMOKERS ONLY

This section is for smokers only.

14. Have you ever taken a smoke break at work?

- (1) Yes
- (2) No
- (3) Not applicable (e.g., smoke breaks are not allowed)

15. On the average, how long are your smoking breaks (not including getting to and from the smoking area)?

- (1) Less than 2 minutes
- (2) More than 2 minutes but less than 4 minutes
- (3) More than 4 minutes but less than 6 minutes
- (4) More than 6 minutes but less than 8 minutes
- (5) More than 8 minutes but less than 10 minutes
- (6) More than 10 minutes but less than 12 minutes
- (7) More than 12 minutes but less than 14 minutes
- (8) More than 14 minutes

16. On the average, how many smoke breaks do you take each day at work?

- (1) 1
- (2) 2
- (3) 3
- (4) 4
- (5) 5
- (6) 6
- (7) 7
- (8) 8
- (9) More than 8
- (10) Not applicable

17. On the average, how long does it take you to get to the closest smoking area from your work area?

- (1) Less than 2 minutes
- (2) More than 2 minutes but less than 4 minutes
- (3) More than 4 minutes but less than 6 minutes
- (4) More than 6 minutes but less than 8 minutes
- (5) More than 8 minutes but less than 10 minutes
- (6) More than 10 minutes

If you are a manager, please go to PART IIC on page 5.

If you are not a manager, please go to PART IIIA on page 8.

PART IIC

MANAGERS ONLY

This section is for managers only. If you are not a manager, please go to Part IIIA of the survey on page 8.

18. Do any of the people you supervise smoke?

- (1) Yes
- (2) No

If on the above question you answered "no," please continue to Part IIIA of the survey on page 8. If you answered "yes," please continue to the next question.

19. On the average, how many smoke breaks do people you supervise take each day?

- (1) 1
- (2) 2
- (3) 3
- (4) 4
- (5) 5
- (6) 6
- (7) 7
- (8) 8
- (9) More than 8
- (10) Not applicable

20. On the average, how long are the smoke breaks of the people you supervise (not including getting to and from the smoking area)?

- (1) Less than 2 minutes
- (2) More than 2 minutes but less than 4 minutes
- (3) More than 4 minutes but less than 6 minutes
- (4) More than 6 minutes but less than 8 minutes
- (5) More than 8 minutes but less than 10 minutes
- (6) More than 10 minutes but less than 12 minutes
- (7) More than 12 minutes but less than 14 minutes
- (8) More than 14 minutes
- (9) Don't know
- (10) Not applicable

21. On the average, how long does it take for the people you supervise to get to the nearest smoking area?

- (1) Less than 2 minutes
- (2) More than 2 minutes but less than 4 minutes
- (3) More than 4 minutes but less than 6 minutes
- (4) More than 6 minutes but less than 8 minutes
- (5) More than 8 minutes but less than 10 minutes
- (6) More than 10 minutes
- (7) Don't know
- (8) Not applicable

22. Do you currently have a smoke break policy?

- (1) Yes
- (2) No
- (3) Not applicable (someone else implemented the policy)

If you answered "no" or "not applicable" on question 22, please go to part IIIA of the survey on page 8. If you answered "yes," please continue to the next question.

23. Which of the following statements best describes your policy regulating smoke breaks for your people?

- (1) My people cannot take breaks at work to smoke.
- (2) My people can take a break anytime they want to smoke if there is no work going on.
- (3) If no work is going on, my people ask me if they can take a smoke break.
- (4) I have established certain time periods throughout the day when my people can take a smoke break.

24. Which of the following statements best describes the time period you give your people for smoke breaks?

- (1) Not applicable since I don't allow smoke breaks.
- (2) I have given my people a fixed time limit for smoke breaks.
- (3) When work is caught-up, I let my people take a smoke break for as long as they want.
- (4) Each individual decides how much time they need.

25. Which of the following statements best describes the number of smoke breaks you allow your people to take each day?

- (1) Not applicable since I don't allow smoke breaks.
- (2) Not applicable since someone at a higher level determines the number of smoke breaks my people get.
- (3) I limit the number of smoke breaks my people can take each day.
- (4) My people can take smoke breaks whenever they want as long as their work is caught-up.
- (5) My people can decide for themselves how many smoke breaks they need each day.

Please continue to PART IIIA on page 8.



PART III

GENERAL SMOKING AND SMOKE BREAK QUESTIONS

PART IIIA

SMOKERS AND NONSMOKERS

This section of the survey applies to everyone and contains general questions regarding smoking and smoke breaks.

26. Do any of your co-workers in your work area smoke?

- (1) Yes
- (2) No
- (3) Don't know
- (4) Not applicable (e.g., smoke breaks are not allowed)

27. Has anyone you directly work with taken a smoke break in the past month?

- (1) Yes
- (2) No
- (3) Don't know
- (4) Not applicable (e.g., smoke breaks are not allowed)

28. In the last month, have you done another person's work while they were taking a smoke break?

- (1) Yes
- (2) No
- (3) Don't know
- (4) Not applicable (e.g., smoke breaks are not allowed)

29. How has SAC's smoking policy effected the productivity of smokers you work with?

- (1) They are more productive.
- (2) They are less productive.
- (3) No change

If you are a smoker please go to PART IIIB on page 9.

If you are a nonsmoker please go to PART IV on page 10.

PART IIIB

SMOKERS ONLY

This section is for smokers only. If you do not smoke, please go to Part IV on page 10.

30. While on a smoke break, when was the last time you heard about a new policy or personnel change in your organization?

- (1) Today
- (2) This week
- (3) Last week
- (4) Last month
- (5) Before last month
- (6) Never
- (7) Not applicable (e.g., don't smoke at work)

31. People I smoke with at the designated smoking area talk about work:

- (1) Daily
- (2) 3-4 times each week
- (3) 1-2 times each week
- (4) 1-2 times each month
- (5) Once a month
- (6) Less than once a month
- (7) Never

PART IV

ATTITUDINAL QUESTIONS

SMOKERS AND NONSMOKERS

This section of the survey applies to everyone and contains questions regarding how you feel smoke breaks impact your organization.

32. Which of the following statements describes how much of the time you feel satisfied with your job?

- (1) All the time
- (2) Most of the time
- (3) A good deal of the time
- (4) About half of the time
- (5) Occasionally
- (6) Seldom
- (7) Never

33. Which one of the following statements best describes how well you like your job?

- (1) I hate it
- (2) I dislike it
- (3) I don't like it
- (4) I am indifferent to it
- (5) I like it
- (6) I am enthusiastic about it
- (7) I love it

34. Which one of the following statements describes how you think you compare with other people?

- (1) No one likes his/her job better than I like mine
- (2) I like my job much better than most people like theirs
- (3) I like my job better than most people like theirs
- (4) I like my job about as well as most people like theirs
- (5) I dislike my job more than most people dislike theirs
- (6) I dislike my job much more than most people dislike theirs
- (7) No one dislikes his/her job more than I dislike mine

For the following questions, please use the scale below to select the response that best indicates how you feel:

SCALE

1=Strongly disagree  
2=Moderately disagree  
3=Slightly disagree  
4=Neither agree nor disagree

5=Slightly agree  
6=Moderately agree  
7=Strongly agree

35. I think I am doing something important by serving as a member of the Air Force team.
36. There is harmony between smokers and nonsmokers.
37. During smoke breaks, work-related information is spread.
38. Permitting smokers to take smoke breaks increases their productivity.
39. Working conditions are usually below average.
40. The Air Force usually takes care of its own.
41. Smokers seem to be better informed about what is going on at work than nonsmokers.
42. Working conditions associated with my job are acceptable.
43. Smokers accomplish more at work than nonsmokers.
44. There seems to be conflict between smokers and nonsmokers where I work.
45. Productivity suffers because of smoke breaks.
46. I see the Air Force as a way of life and not simply a place to work.
47. One of the reasons people smoke at work is so they can take smoke breaks during the work day.
48. Smokers and nonsmokers are treated the same where I work.
49. Being allowed to take smoke breaks at work does not encourage people to smoke.
50. Smokers and nonsmokers get along well with one another where I work.
51. Smokers hear about new policies at work before nonsmokers.

52. Everyone where I work gets about the same amount of break time each day.
53. In general, my work schedule is flexible enough so I can make personal plans.
54. One of the benefits of smoking is being allowed to take breaks periodically throughout the day to smoke.

Thank you for completing this questionnaire. Please place your answer sheet in the envelope provided and mail it immediately. Thank you for your cooperation.

# Appendix B: Computer Printout of Survey Responses

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2931011004103		002011340012		51416566150301136330643
494102	302	19972	0010	23266321606000506660663
292001	401		0012	16165342234333525453661
291201	704	07401	0012	16164632135044536543266
190201	911	099110000011		3426402140 434524240642
191002	908		2112	15155451415111435551452
192101	405		0000	1426531211602 443450560
192102	979	1	1112	16164220506005630230643
290101	702	07201	0002	15262115314056536021113
393101	207		0012	32205631104333012661006
292003	979		1112	14250301406001516550650
292002	302		0012	15265341505001504364643
393001	804		1112	34330511505056605353553
292101504		05401	0012	24224532144232102441541
191002	909		1112	15264331535404506350253
2923001044102			0011	34355643334322311552343
1 11001331902		042101331112		15261221406334601442660
4943001230323		033201340012		15355342405013514660660
594201	703	07301	0002	15265541536323622343443
191002	004		0010	15160003400424633020430
494002	10		0010	14265340506001606660600
292101	101	02101	0012	24255334134333533333323
293101	909		1012	05166610616014616260045
2 22012112316		03610224000		24361601516055112641066
292102	979	1	0112	14312335311442252333211
494601	415	04511	0012	34364543105124545041643

292001	515		1101	24360205301066621311253
392103	979	1	1112	15363340535433613233552
192001	303		0012	14363440206012515650651
191201	406		0001	33304 24243424334242342
1903011212203		02301	1110	14254420616234625250254
191201	803	08301	0012	15165540635232226453560
1920001044102			0012	05363333233343636633663
192001	604		0012	14261313304023612240641
493101	908	1	0012	04265335231306636363643
191401	908	1	1112	16162231426333424452342
191003	979		1112	15363440536303603630660
292101	104	01401	0012	15265231415121516560663
292101	307		0001	16164503434146616653366
494601204		02401	0010	15164430606042605350510
192102	212	01201	1012	24165341615200605660551
4 22000230929		1	1132	15165345333615333623
393103	979	19971	1112	51553333534333603633343
493102	504	05401	0012	15265344502033505530550
5944011034808		088001340001		15066536401004006060463
355111	50202500520013200121005265632506000506660650			
0250001233807			0112	16165330666023636066066
145102	901	1	0012	15164311416000425563554
145102	303	-	0002	16265651235312546662454

# Appendix C: Chi Square Tables

CHI SQUARE TABLE 1

Crosstabulation of Average Daily Smoke Break Time  
with Perceived Conflict and Equity by Nonsmokers

CONFLICT/ EQUITY	CUMULATIVE SMOKE BREAK TIME			Total
	T<=30	30<T<=60	T>60	
Frequency				
Expected				
Percent				
Row Pct				
Col Pct				
LOW CONFLICT	33	20	23	76
	26.485	21.879	27.636	
	25.00	15.15	17.42	57.58
	43.42	26.32	30.26	
	71.74	52.63	47.92	
HIGH CONFLICT	13	18	25	56
	19.515	16.121	20.364	
	9.85	13.64	18.94	42.42
	23.21	32.14	44.64	
	28.26	47.37	52.08	
Total	46	38	48	132
	34.85	28.79	36.36	100.00

Statistic	DF	Value	Prob
Chi-Square	2	5.991	0.050
Kendall's Tau-b		0.191	0.079
Sample Size = 132			

# CHI SQUARE TABLE 2

Crosstabulation of Average Daily Smoke Break Time  
with Perceived Conflict and Equity by Smokers

CONFLICT/ EQUITY	CUMULATIVE SMOKE BREAK TIME			
Frequency				
Expected				
Percent				
Row Pct				
Col Pct	T<=25	25<T<=50	T>50	Total
LOW CONFLICT	13	16	6	35
	12.895	14.123	7.9825	
	22.81	28.07	10.53	61.40
	37.14	45.71	17.14	
	61.90	69.57	46.15	
HIGH CONFLICT	8	7	7	22
	8.1053	8.8772	5.0175	
	14.04	12.28	12.28	38.60
	36.36	31.82	31.82	
	38.10	30.43	53.85	
Total	21	23	13	57
	36.84	40.35	22.81	100.00
Statistic	DF		Value	Prob
Chi-Square	2		1.924	0.382
Sample Size = 57				

CHI SQUARE TABLE 3

Crosstabulation of Average Daily Smoke Break Time  
with Perceived Productivity by Nonsmokers

PRODUCTIVITY CUMULATIVE SMOKE BREAK TIME

Frequency Expected Percent Row Pct Col Pct	T<=30	30<T<=60	T>60	Total
LOW PRODUCT	17 25.439 12.88 23.29 36.96	21 21.015 15.91 28.77 55.26	35 26.545 26.52 47.95 72.92	73  55.30
HIGH PRODUCT	29 20.561 21.97 49.15 63.04	17 16.985 12.88 28.81 44.74	13 21.455 9.85 22.03 27.08	59  44.70
Total	46 34.85	38 28.79	48 36.36	132 100.00
Statistic	DF	Value	Prob	
Chi-Square	2	12.288	0.002	
Kendall's Tau-b		-0.288	0.077	
Sample Size = 132				

# CHI SQUARE TABLE 4

Crosstabulation of Average Daily Smoke Break Time  
with Perceived Productivity by Smokers

PRODUCTIVITY CUMULATIVE SMOKE BREAK TIME

Frequency Expected Percent Row Pct Col Pct	T<=25	25<T<=50	T>50	Total
LOW PRODUCT	10 11.053 17.54 33.33 47.62	10 12.105 17.54 33.33 43.48	10 6.8421 17.54 33.33 76.92	30 52.63
HIGH PRODUCT	11 9.9474 19.30 40.74 52.38	13 10.895 22.81 48.15 56.52	3 6.1579 5.26 11.11 23.08	27 47.37
Total	21 36.84	23 40.35	13 22.81	57 100.00
Statistic	DF	Value	Prob	
Chi-Square	2	4.062	0.131	
Sample Size = 57				

# CHI SQUARE TABLE 5

Crosstabulation of Average Daily Smoke Break Time  
with Job Satisfaction Reported by Nonsmokers

JOB SATISFACTION		CUMULATIVE SMOKE BREAK TIME			
Frequency					
Expected					
Percent					
Row Pct					
Col Pct	T<=30	30<T<=60	T>60	Total	
LOW JOBSAT	30	22	31	83	
	28.924	23.894	30.182		
	22.73	16.67	23.48	62.88	
	36.14	26.51	37.35		
	65.22	57.89	64.58		
HIGH JOBSAT	16	16	17	49	
	17.076	14.106	17.818		
	12.12	12.12	12.88	37.12	
	32.65	32.65	34.69		
	34.78	42.11	35.42		
Total	46	38	48	132	
	34.85	28.79	36.36	100.00	
Statistic	DF		Value	Prob	
Chi-Square	2		0.572	0.751	
Sample Size = 132					

# CHI SQUARE TABLE 6

Crosstabulation of Average Daily Smoke Break Time  
with Job Satisfaction Reported by Smokers

JOB SATISFACTION		CUMULATIVE SMOKE BREAK TIME			
Frequency					
Expected					
Percent					
Row Pct					
Col Pct		T<=25	25<T<=50	T>50	Total
LOW JOBSAT	8	14	5	27	
	9.9474	10.895	6.1579		
	14.04	24.56	8.77	47.37	
	29.63	51.85	18.52		
	38.10	60.87	38.46		
HIGH JOBSAT	13	9	8	30	
	11.053	12.105	6.8421		
	22.81	15.79	14.04	52.63	
	43.33	30.00	26.67		
	61.90	39.13	61.54		
Total	21	23	13	57	
	36.84	40.35	22.81	100.00	

Statistic	DF	Value	Prob
Chi-Square	2	2.820	0.244
Sample Size = 57			



# CHI SQUARE TABLE 7

Crosstabulation of Average Daily Smoke Break Time  
with Smoker Networking Reported by Nonmokers

SMOKER NETWORKING		CUMULATIVE SMOKE BREAK TIME			
Frequency					
Expected					
Percent					
Row Pct					
Col Pct		T<=30	30<T<=60	T>60	Total
-----+-----+-----+-----+-----					
LOW NETWORK		25	22	26	73
		25.439	21.015	26.545	
		18.94	16.67	19.70	55.30
		34.25	30.14	35.62	
		54.35	57.89	54.17	
-----+-----+-----+-----+-----					
HIGH NETWORK		21	16	22	59
		20.561	16.985	21.455	
		15.91	12.12	16.67	44.70
		35.59	27.12	37.29	
		45.65	42.11	45.83	
-----+-----+-----+-----+-----					
Total		46	38	48	132
		34.85	28.79	36.36	100.00
-----+-----+-----+-----+-----					
Statistic		DF	Value	Prob	
Chi-Square		2	0.145	0.930	
Sample Size = 132					

# CHI SQUARE TABLE 8

Crosstabulation of Average Daily Smoke Break Time  
with Smoker Networking Reported by Smokers

SMOKER NETWORKING	CUMULATIVE SMOKE BREAK TIME			
Frequency				
Expected				
Percent				
Row Pct				
Col Pct	T<=25	25<T<=50	T>50	Total
LOW NETWORK	5	9	6	20
	7.3684	8.0702	4.5614	
	8.77	15.79	10.53	35.09
	25.00	45.00	30.00	
	23.81	39.13	46.15	
HIGH NETWORK	16	14	7	37
	13.632	14.93	8.4386	
	28.07	24.56	12.28	64.91
	43.24	37.84	18.92	
	76.19	60.87	53.85	
Total	21	23	13	57
	36.84	40.35	22.81	100.00

Statistic	DF	Value	Prob
Chi-Square	2	2.037	0.361
Sample Size = 57			

# CHI SQUARE TABLE 9

Crosstabulation of Average Daily Smoke Break Time  
with Organizational Commitment Reported by Nonsmokers

## ORGANIZATIONAL COMMITMENT CUMULATIVE SMOKE BREAK TIME

Frequency Expected Percent Row Pct Col Pct	T<=30	30<T<=60	T>60	Total
LOW ORGCOM	18 20.212 13.64 31.03 39.13	17 16.697 12.88 29.31 44.74	23 21.091 17.42 39.66 47.92	58  43.94
HIGH ORGCOM	28 25.788 21.21 37.84 60.87	21 21.303 15.91 28.38 55.26	25 26.909 18.94 33.78 52.08	74  56.06
Total	46 34.85	38 28.79	48 36.36	132 100.00

Statistic	DF	Value	Prob
Chi-Square	2	0.750	0.687
Sample Size = 132			

# CHI SQUARE TABLE 10

Crosstabulation of Average Daily Smoke Break Time  
with Organizational Commitment Reported by Smokers

## ORGANIZATIONAL CUMULATIVE SMOKE BREAK TIME COMMITMENT

Frequency Expected Percent Row Pct Col Pct	T<=25	25<T<=50	T>50	Total
LOW ORGCOM	13 9.2105 22.81 52.00 61.90	7 10.088 12.28 28.00 30.43	5 5.7018 8.77 20.00 38.46	25 43.86
HIGH ORGCOM	8 11.789 14.04 25.00 38.10	16 12.912 28.07 50.00 69.57	9 7.2382 14.04 25.00 61.54	32 56.14
Total	21 36.84	23 40.35	13 22.81	57 100.00

Statistic	DF	Value	Prob
Chi-Square	2	4.614	0.100
Sample Size = 57			

# CHI SQUARE TABLE 11

Crosstabulation of Average Daily Smoke Break Time  
with Encouragement to Smoke Reported by Nonsmokers

ENCOURAGEMENT CUMULATIVE SMOKE BREAK TIME  
TO SMOKE

Frequency Expected Percent Row Pct Col Pct	T<=30	30<T<=60	T>60	Total
LOW ENCSMOK	22 19.515 16.67 39.29 47.83	14 16.121 10.61 25.00 36.84	20 20.364 15.15 35.71 41.67	56 42.42
HIGH ENCSMOK	24 26.485 18.18 31.58 52.17	24 21.879 18.18 31.58 63.16	28 27.636 21.21 36.84 58.33	76 57.58
Total	46 34.85	38 28.79	48 36.36	132 100.00

Statistic	DF	Value	Prob
Chi-Square	2	1.046	0.593
Sample Size = 132			

# CHI SQUARE TABLE 12

Crosstabulation of Average Daily Smoke Break Time  
with Encouragement to Smoke Reported by Smokers

ENCOURAGEMENT CUMULATIVE SMOKE BREAK TIME  
TO SMOKE

Frequency Expected Percent Row Pct Col Pct	T<=25	25<T<=50	T>50	Total
LOW ENCSMOK	8 12.158 14.04 24.24 38.10	17 13.316 29.82 51.52 73.91	8 7.5263 14.04 24.24 61.54	33 57.89
HIGH ENCSMOK	13 8.8421 22.81 54.17 61.90	6 9.6842 10.53 25.00 26.09	5 5.4737 8.77 20.83 38.46	24 42.11
Total	21 36.84	23 40.35	13 22.81	57 100.00

Statistic	DF	Value	Prob
Chi-Square	2	5.869	0.053
Sample Size = 57			

# CHI SQUARE TABLE 13

Crosstabulation of Average Daily Smoke Break Time  
with Organizational Climate Reported by Nonsmokers

## ORGANIZATIONAL CLIMATE CUMULATIVE SMOKE BREAK TIME

Frequency Expected Percent Row Pct Col Pct	T<=30	30<T<=60	T>60	Total
LOW ORG CLIM	20 19.864 15.15 35.09 43.48	15 16.409 11.36 26.32 39.47	22 20.727 16.67 38.60 45.83	57 43.18
HIGH ORG CLIM	26 26.136 19.70 34.67 56.52	23 21.591 17.42 30.67 60.53	26 27.273 19.70 34.67 54.17	75 56.82
Total	46 34.85	38 28.79	48 36.36	132 100.00

Statistic	DF	Value	Prob
Chi-Square	2	0.352	0.839
Sample Size = 132			

# CHI SQUARE TABLE 14

Crosstabulation of Average Daily Smoke Break Time  
with Organizational Climate Reported by Smokers

## ORGANIZATIONAL CLIMATE CUMULATIVE SMOKE BREAK TIME

Frequency Expected Percent Row Pct Col Pct	T<=25	25<T<=50	T>50	Total
LOW ORG CLIM	10 8.4737 17.54 43.48 47.62	8 9.2807 14.04 34.78 34.78	5 5.2456 8.77 21.74 38.46	23 40.35
HIGH ORG CLIM	11 12.526 19.30 32.35 52.38	15 13.719 26.32 44.12 65.22	8 7.7544 14.04 23.53 61.54	34 59.65
Total	21 36.84	23 40.35	13 22.81	57 100.00

Statistic	DF	Value	Prob
Chi-Square	2	0.776	0.678
Sample Size = 57			



# Appendix D: Proc Univariate Products

## PROC UNIVARIATE TABLE 1

### Statistical Description of Perceived Intergroup Conflict and Inequity by Nonsmokers

#### Moments

N	129	Sum Wgts	129
Mean	3.089922	Sum	398.6
Std Dev	1.251489	Variance	1.566226
Skewness	0.685979	Kurtosis	0.335252
USS	1432.12	CSS	200.4769
CV	40.50229	Std Mean	0.110187
T:Mean=0	28.0424	Prob> T	0.0001
Num ^= 0	129	Num > 0	129
M(Sign)	64.5	Prob> M	0.0001
Sgn Rank	4192.5	Prob> S	0.0001

#### Quantiles(Def=5)

100 Max	7	99	7
75 Q3	3.8	95	5.4
50 Med	2.8	90	5
25 Q1	2.2	10	1.6
0 Min	1	5	1.2
		1	1
Range	6		
Q3-Q1	1.6		
Mode	2.2		

#### Extremes

Lowest	Obs	Highest	Obs
1(	103)	5.6(	99)
1(	51)	5.8(	43)
1(	33)	5.8(	60)
1(	2)	7(	31)
1.2(	125)	7(	94)

Missing Value	.
Count	3
Count/Nobs	2.27

# PROC UNIVARIATE TABLE 2

## Statistical Description of Perceived Intergroup Conflict and Inequity by Smokers

### Moments

N	56	Sum Wgts	56
Mean	2.610714	Sum	146.2
Std Dev	1.362041	Variance	1.855156
Skewness	1.304198	Kurtosis	2.007449
USS	483.72	CSS	102.0336
CV	52.1712	Std Mean	0.18201
T:Mean=0	14.34376	Prob> T	0.0001
Num ^= 0	56	Num > 0	56
M(Sign)	28	Prob> M	0.0001
Sgn Rank	798	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	7	99	7
75 Q3	3.6	95	5
50 Med	2.1	90	4
25 Q1	1.6	10	1.2
0 Min	1	5	1
		1	1
Range	6		
Q3-Q1	2		
Mode	1.6		

### Extremes

Lowest	Obs	Highest	Obs
1(	44)	4.4(	8)
1(	34)	4.6(	22)
1(	12)	5(	43)
1.2(	58)	7(	16)
1.2(	29)	7(	21)

Missing Value	.
Count	2
Count/Nobs	3.45

# PROC UNIVARIATE TABLE 3

## Statistical Description of Perceived Productivity of Smokers by Nonsmokers

### Moments

N	125	Sum Wgts	125
Mean	3	Sum	375
Std Dev	0.916911	Variance	0.840726
Skewness	-0.38174	Kurtosis	-0.07529
USS	1229.25	CSS	104.25
CV	30.5637	Std Mean	0.082011
T:Mean=0	36.58045	Prob> T	0.0001
Num ^= 0	125	Num > 0	125
M(Sign)	62.5	Prob> M	0.0001
Sgn Rank	3937.5	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	5	99	5
75 Q3	3.5	95	4.25
50 Med	3	90	4
25 Q1	2.5	10	1.5
0 Min	1	5	1.25
		1	1
Range	4		
Q3-Q1	1		
Mode	3		

### Extremes

Lowest	Obs	Highest	Obs
1(	99)	4.5(	68)
1(	79)	4.75(	44)
1(	58)	4.75(	102)
1(	31)	5(	15)
1(	13)	5(	85)

Missing Value	.
Count	7
Count/Nobs	5.30

# PROC UNIVARIATE TABLE 4

## Statistical Description of Perceived Productivity of Smokers by Smokers

### Moments

N	53	Sum Wgts	53
Mean	4.099057	Sum	217.25
Std Dev	0.70257	Variance	0.493605
Skewness	-1.39069	Kurtosis	3.261644
USS	916.1875	CSS	25.66745
CV	17.1398	Std Mean	0.096505
T:Mean=0	42.47488	Prob> T	0.0001
Num ^= 0	53	Num > 0	53
M(Sign)	26.5	Prob> M	0.0001
Sgn Rank	715.5	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	5.25	99	5.25
75 Q3	4.75	95	5
50 Med	4.25	90	4.75
25 Q1	3.75	10	3.5
0 Min	1.75	5	2.75
		1	1.75
Range	3.5		
Q3-Q1	1		
Mode	4		

### Extremes

Lowest	Obs	Highest	Obs
1.75(	42)	5(	6)
1.75(	4)	5(	45)
2.75(	43)	5(	47)
3(	20)	5(	51)
3.25(	24)	5.25(	32)

Missing Value	.
Count	5
Count/Nobs	8.62

# PROC UNIVARIATE TABLE 5

## Statistical Description of Job Satisfaction Reported by Nonsmokers

### Moments

N	128	Sum Wgts	128
Mean	3.018229	Sum	386.3333
Std Dev	0.9795	Variance	0.95942
Skewness	0.577248	Kurtosis	0.138234
USS	1287.889	CSS	121.8464
CV	32.4528	Std Mean	0.086576
T:Mean=0	34.86204	Prob> T	0.0001
Num ^= 0	128	Num > 0	128
M(Sign)	64	Prob> M	0.0001
Sgn Rank	4128	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	5.666667	99	5.333333
75 Q3	3.666667	95	5
50 Med	3	90	4.333333
25 Q1	2.333333	10	2
0 Min	1	5	1.666667
		1	1
Range	4.666667		
Q3-Q1	1.333333		
Mode	2.666667		

### Extremes

Lowest	Obs	Highest	Obs
1(	88)	5.333333(	14)
1(	72)	5.333333(	38)
1.333333(	2)	5.333333(	46)
1.666667(	130)	5.333333(	47)
1.666667(	127)	5.666667(	102)

Missing Value	.
Count	4
Count/Nobs	3.03

# PROC UNIVARIATE TABLE 6

## Statistical Description of Job Satisfaction Reported by Smokers

### Moments

N	55	Sum Wgts	55
Mean	2.915152	Sum	160.3333
Std Dev	1.052565	Variance	1.107894
Skewness	0.587208	Kurtosis	0.2663
USS	527.2222	CSS	59.82626
CV	36.10671	Std Mean	0.141928
T:Mean=0	20.53967	Prob> T	0.0001
Num ^= 0	55	Num > 0	55
M(Sign)	27.5	Prob> M	0.0001
Sgn Rank	770	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	5.666667	99	5.666667
75 Q3	3.333333	95	5.333333
50 Med	3	90	4.333333
25 Q1	2	10	1.666667
0 Min	1	5	1.333333
		1	1
Range	4.666667		
Q3-Q1	1.333333		
Mode	3		

### Extremes

Lowest	Obs	Highest	Obs
1(	4)	4.666667(	8)
1.333333(	52)	4.666667(	54)
1.333333(	46)	5.333333(	20)
1.333333(	44)	5.333333(	22)
1.333333(	14)	5.666667(	23)

Missing Value	.
Count	3
Count/Nobs	5.17

PROC UNIVARIATE TABLE 7

Statistical Description of Smoker  
Networking Reported by Nonsmokers

Moments

N	130	Sum Wgts	130
Mean	3.35641	Sum	436.3333
Std Dev	1.239035	Variance	1.535208
Skewness	0.106505	Kurtosis	-0.73805
USS	1662.556	CSS	198.0419
CV	36.91549	Std Mean	0.108671
T:Mean=0	30.8861	Prob> T	0.0001
Num ^= 0	130	Num > 0	130
M(Sign)	65	Prob> M	0.0001
Sgn Rank	4257.5	Prob> S	0.0001

Quantiles(Def=5)

100 Max	6	99	6
75 Q3	4.333333	95	5.333333
50 Med	3.333333	90	5
25 Q1	2.333333	10	1.833333
0 Min	1	5	1.333333
		1	1
Range	5		
Q3-Q1	2		
Mode	2.333333		

Extremes

Lowest	Obs	Highest	Obs
1(	115)	5.666667(	44)
1(	106)	5.666667(	90)
1(	51)	6(	2)
1(	8)	6(	15)
1.333333(	80)	6(	92)

Missing Value	.
Count	2
Count/Nobs	1.52

# PROC UNIVARIATE TABLE 8

## Statistical Description of Smoker Networking Reported by Smokers

### Moments

N	56	Sum Wgts	56
Mean	4.583333	Sum	256.6667
Std Dev	1.174218	Variance	1.378788
Skewness	-0.63116	Kurtosis	-0.52093
USS	1252.222	CSS	75.83333
CV	25.6193	Std Mean	0.156911
T:Mean=0	29.20968	Prob> T	0.0001
Num ^= 0	56	Num > 0	56
M(Sign)	28	Prob> M	0.0001
Sgn Rank	798	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	6.333333	99	6.333333
75 Q3	5.333333	95	6
50 Med	5	90	6
25 Q1	3.666667	10	3
0 Min	1.666667	5	2.333333
		1	1.666667
Range	4.666667		
Q3-Q1	1.666667		
Mode	5		

### Extremes

Lowest	Obs	Highest	Obs
1.666667(	24)	6(	32)
2.333333(	52)	6(	45)
2.333333(	44)	6(	48)
2.333333(	4)	6.333333(	6)
3(	58)	6.333333(	30)

Missing Value	.
Count	2
Count/Nobs	3.45



PROC UNIVARIATE TABLE 9

Statistical Description of Organizational  
Commitment Reported by Nonsmokers

Moments

N	131	Sum Wgts	131
Mean	5.129771	Sum	672
Std Dev	1.28274	Variance	1.645423
Skewness	-0.89033	Kurtosis	0.227508
USS	3661.111	CSS	213.905
CV	25.0058	Std Mean	0.112074
T:Mean=0	45.77147	Prob> T	0.0001
Num ^= 0	131	Num > 0	131
M(Sign)	65.5	Prob> M	0.0001
Sgn Rank	4323	Prob> S	0.0001

Quantiles(Def=5)

100 Max	7	99	7
75 Q3 -	6	95	6.666667
50 Med	5.333333	90	6.666667
25 Q1	4.666667	10	3
0 Min	1.333333	5	2.333333
		1	2
Range	5.666667		
Q3-Q1	1.333333		
Mode	5.666667		

Extremes

Lowest	Obs	Highest	Obs
1.333333(	109)	7(	5)
2(	102)	7(	33)
2(	42)	7(	51)
2(	38)	7(	61)
2.333333(	111)	7(	128)

Missing Value	.
Count	1
Count/Nobs	0.76

PROC UNIVARIATE TABLE 10

Statistical Description of Organizational  
Commitment Reported by Smokers

Moments

N	58	Sum Wgts	58
Mean	5.373563	Sum	311.6667
Std Dev	1.411561	Variance	1.992505
Skewness	-1.06603	Kurtosis	0.664987
USS	1788.333	CSS	113.5728
CV	26.26863	Std Mean	0.185347
T:Mean=0	28.9919	Prob> T	0.0001
Num ^= 0	58	Num > 0	58
M(Sign)	29	Prob> M	0.0001
Sgn Rank	855.5	Prob> S	0.0001

Quantiles(Def=5)

100 Max	7	99	7
75 Q3	6.333333	95	7
50 Med	5.666667	90	7
25 Q1	4.666667	10	3
0 Min	1	5	2.666667
		1	1
Range	6		
Q3-Q1	1.666667		
Mode	6.333333		

Extremes

Lowest	Obs	Highest	Obs
1(	20)	7(	4)
2(	23)	7(	12)
2.666667(	47)	7(	15)
2.666667(	41)	7(	32)
3(	27)	7(	43)

# PROC UNIVARIATE TABLE 11

## Statistical Description of Encouragement to Smoke Reported by Nonsmokers

### Moments

N	130	Sum Wgts	130
Mean	3.464103	Sum	450.3333
Std Dev	1.525266	Variance	2.326436
Skewness	0.381812	Kurtosis	-0.52312
USS	1860.111	CSS	300.1103
CV	44.03062	Std Mean	0.133775
T:Mean=0	25.89506	Prob> T	0.0001
Num ^= 0	130	Num > 0	130
M(Sign)	65	Prob> M	0.0001
Sgn Rank	4257.5	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	7	99	6.666667
75 Q3	4	95	6.333333
50 Med	3.333333	90	5.833333
25 Q1	2.333333	10	1.333333
0 Min	1	5	1
		1	1
Range	6		
Q3-Q1	1.666667		
Mode	4		

### Extremes

Lowest	Obs	Highest	Obs
1(	116)	6.333333(	99)
1(	77)	6.666667(	13)
1(	76)	6.666667(	60)
1(	71)	6.666667(	90)
1(	51)	7(	65)

Missing Value	.
Count	2
Count/Nobs	1.52

# PROC UNIVARIATE TABLE 12

## Statistical Description of Encouragement to Smoke Reported by Smokers

### Moments

N	56	Sum Wgts	56
Mean	2.339286	Sum	131
Std Dev	1.152058	Variance	1.327237
Skewness	0.378984	Kurtosis	-1.07711
USS	379.4444	CSS	72.99802
CV	49.24826	Std Mean	0.15395
T:Mean=0	15.19508	Prob> T	0.0001
Num ^= 0	56	Num > 0	56
M(Sign)	28	Prob> M	0.0001
Sgn Rank	798	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	5	99	5
75 Q3	3.166667	95	4
50 Med	2	90	4
25 Q1	1.166667	10	1
0 Min	1	5	1
		.1	1
Range	4		
Q3-Q1	2		
Mode	1		

### Extremes

Lowest	Obs	Highest	Obs
1(	58)	4(	45)
1(	52)	4(	49)
1(	51)	4(	56)
1(	46)	4.333333(	40)
1(	44)	5(	47)

Missing Value	.
Count	2
Count/Nobs	3.45

# PROC UNIVARIATE TABLE 13

## Statistical Description of Organizational Climate Reported by Nonmokers

### Moments

N	129	Sum Wgts	129
Mean	4.945736	Sum	638
Std Dev	1.247073	Variance	1.555192
Skewness	-0.58882	Kurtosis	-0.14432
USS	3354.444	CSS	199.0646
CV	25.21512	Std Mean	0.109799
T:Mean=0	45.04367	Prob> T	0.0001
Num ^= 0	129	Num > 0	129
M(Sign)	64.5	Prob> M	0.0001
Sgn Rank	4192.5	Prob> S	0.0001

### Quantiles(Def=5)

100 Max	7	99	7
75 Q3	6	95	6.666667
50 Med	5	90	6.333333
25 Q1	4	10	3.333333
0 Min	1.333333	5	2.333333
		1	2
Range	5.666667		
Q3-Q1	2		
Mode	5.666667		

### Extremes

Lowest	Obs	Highest	Obs
1.333333(	99)	6.666667(	122)
2(	46)	7(	5)
2(	42)	7(	6)
2(	14)	7(	51)
2.333333(	102)	7(	75)

Missing Value	.
Count	3
Count/Nobs	2.27

PROC UNIVARIATE TABLE 13

Statistical Description of Organizational  
Climate Reported by Smokers

Moments

N	56	Sum Wgts	56
Mean	4.97619	Sum	278.6667
Std Dev	1.525351	Variance	2.326696
Skewness	-0.7822	Kurtosis	-0.28992
USS	1514.667	CSS	127.9683
CV	30.65299	Std Mean	0.203834
T:Mean=0	24.413	Prob> T	0.0001
Num ^= 0	56	Num > 0	56
M(Sign)	28	Prob> M	0.0001
Sgn Rank	798	Prob> S	0.0001

Quantiles(Def=5)

100 Max	7	99	7
75 Q3	6.166667	95	7
50 Med	5.5	90	6.666667
25 Q1	4	10	2.666667
0 Min	1	5	2
		1	1
Range	6		
Q3-Q1	2.166667		
Mode	6		

Extremes

Lowest	Obs	Highest	Obs
1(	20)	6.666667(	24)
1.666667(	22)	6.666667(	39)
2(	16)	7(	4)
2(	6)	7(	43)
2.666667(	50)	7(	44)

Missing Value	.
Count	2
Count/Nobs	3.45

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### Vita

Captain Glenn G. Hinken was born on 29 June 1960 in Covington, Kentucky. He graduated from high school in 1978 and attended Northern Kentucky University. In May 1982 he married Cammie Fischer. He graduated in 1984 with Bachelor of Arts Degrees in both Journalism and Philosophy and was recognized as the "Outstanding Student" in both programs. He entered Officer Training School in September 1985 and was commissioned in December. From January to May 1986, he attended Aircraft Maintenance Officer Class at Chanute AFB, Illinois. After graduation, he was assigned to Strategic Air Command's 509th Bombardment Wing, Pease AFB, New Hampshire, where he served as the Officer-In-Charge of the KC-135 Tanker Branch and the Officer-In-Charge of the Aircraft Readiness Center. While at Pease he completed Squadron Officer School by correspondence. He entered the Air Force Institute of Technology School of Systems and Logistics in June 1990.

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# REPORT DOCUMENTATION PAGE

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